

An introduction
tion of Algorisme, to learn to
reken With the Pen or With the
Counters, in whole numbers or in
broken. Newly euersene and correc-
ted. Whereto is annexed cer-
taine notable and pleasant
rules of false positions
not before sene in
our English
tounge.

By which all
maner of difficult que-
stions may easely be
dissolued and
solyed.

(*)

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Oil

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Not

To the Reader.

That Arte and feate (Deare Reader) whom vtilitie and necessity both do cōmend: needeth greatly of no other commendacion. How profitable and necessarye this feate of Algorithmis is, to al maner of persōs which haue reckonings or accounts, either to make, or els to receiue, needeth no Declaration. Neither is this Arte onely necessary to those, but also in maner to all maner of Sciencies and Artificies. For what craft is that but it sometime doth occupy, not only one part of this feate, but al the partes. And for because that Diuers rules in thys booke haue not bene in times past very commodiously expressed and set forth, & many examples, mo then needed a great sort coheaped together: therfore pains haue ben taken both in the better and more clearer Declaration & expressing of the sayd rules, and also in the reselecting and cutting of Diuers superfluous and boydring things, rather hinderance to the dil-

To the Reader.

gent Reader, then furtherance. Furthermore there is added the rules of false positions, the whych how conuenient & profitable they be to the ready solucion of all hard & misty questions, when ye haue redde them then iudge. Now then ye shall vnderstand that in this Arte there are .vii. necessarye & distinct partes to be knowen, that is Numeration, Addition, Subtraction, Multiplication, Particion, Progression, & Reduction. Of the whych .vii. here after shall be singularly entreated of ech of the in their chapters. But I aduertise you first to begyn at the first part, and then successiuelye to the second, and so the third. &c. learning euery part by it selfe exactly, as they be set forth in this booke. For if you leape to the seconde part before you haue perfectly p first, or to the thyrde, before you haue sene the second: you shall neuer prosper nor profit in thys

Arte. Vale.

¶ The

The fyrst part is of Numeration.

Numeracion is a maner of expressing of numbers by certayne figures which are called figures of Algorisme, the which be ten, as in this example.

i. ii. iii. iiii. v. vi. vii. viii. ix.

I 2 3 4 5 6 7 8 9 0

Of the which nyne be significatiue, the tēth called a sipher, signifieng nothing of it selfe, but onely set before the other significatiue figures, augmēteth their signification, In Numeracion by thys craft ye must euermore begynne at the right side of the booke, and so towards the left side, as in this example.

k i h g f e d c b a

3 2 0 4 6 7 5 2 8 9

This figure 9 vnder a, standeth in the first place, 8 vnder b, standeth in the second place, and so forth to the ende, so that 3 vnder k, standeth in the last place.

Al.iii.

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Of Numeration.

By these ten figures al maner of number possible to be excogitat, may clearly and plainly be expzessed, which albe it, that of them selfe they signifie but simple and litle number, as ye se afoze, yet according to the diuersity of y place they stand in, diuersly doth their significacion amount. Wherefoze in Numeracion ye must note twoo thynges, the figure significatiue, & the place it standeth in, for the significatiō of the figure depēdeth vpon the number of the place it standeth in. For example, thys figure 8 standing alone, or in y first place, signifieth but .viii., but if he stand in the second place as here 80, he signifieth .viii. times ten, which is called .iiii. score. If he stand in the third place, as here 800 he signifieth .viii. hundredeth. &c. Therefore ye must know perfectly the significacion of euery place, befoze ye can perfectly number. Wherefoze vnderstande ye, that the firste place is a place of vnities, so that any figure standing in that place

Of Numeration.

place, signifieth no more, then when he standeth alone. The seconde place is a place of tens, the third is a place of hundredes. The fourth place is a place of thousandes. The fift place is a place of ten thousandes. The.vi. place a place of hundredeth thousandes. The.vii. place is of thousand thousandes, which is called a Myllion. The.viii. place is of ten myllions. The.ix. is a place of hundred myllions. The.x. of thousand myllions. The.xi. of ten thousand myllions. The.xii. of a hundredeth thousande myllions. The.xiii. of a thousand thousand myllions, & so forth infinitely every place ensuing signifieth ten times as much as the place going before. Thys must you know perfectly what every place geueth and signifieth, for the place geueth Denomination, & the figure standing in the same place, expresseth how many of the same Denomination is to be vnderstande, as in example ye shall more playnly perceiue.

A.iiii.

In

Of Numeration.

In this sum 3400872619 this figure 2 standeth in the .iiii. place, now by your rule before, the .iiii. place is a place of thousands, then this figure 2 standing in the same place, geueth vs to w^{yt} that it is .ii. thousand. Likewise this figure 8 standing in the .vi. place, now by your rule as afore, the .vi. place is of hundredeth thousandes, then this figure 8 standing in that place receiuethe Denomination of the place, & representeth to vs .viii. hundredeth thousandes. Lyke wyse this figure 1 standeth in the second place, & because the second place is a place of tens, therfore this figure 1 standing there, is bound to the significatiō of the place, and so signifieth one ten. If a figure of 4 stode there, it should signify .iiii. tens, that is forty, and so forth. Then for a farther declaratiō of the foresayd summe, & al other lyke summes: This figure 9 standing in the first place, signifieth but himself whych is .ix. This figure 1 standing in the

Of Numeration:

the seconde place, because the seconde place is ever a place of tens, signifieth one ten. The figure 6 standyng in the thyrdd place, because the thyrdd place is a place of hundzethes, doth signifie .vi. hundzeth. The figure 2 in the .iiii. place signifieth .ii. thousande. The figure 7 standing in the fyft place, and that place being a place of ten thousandes, signifieth .vii. tynges ten thousande, whych is .iii. scoze and fenne thousande. The figure 8 in the .vi. place signifieth .viij. hundzeth thousand. The chipher 0 that standeth in the .vii. place, signifieth nothyng, but onelye maketh by a place, that the figures significative folowynge, maye encrease their significacion. Like iudgement is of the other cipher standyng in the .viij. place. In the .ix. place standeth the figure of 4, and this place is a place of hundzeth myllions, therefore this figure 4 there signifieth .iiii. C. myllions. In the .x. place standeth the figure 3, and this place is a place of thousand

Of Numeration.

thousand myllions, therefore it signifieth three thousand myllions. So the whole summe is three thousand myllions, foure hundred myllions, eight hundred thousand, three score thousande, twelue thousand, sixe hundred and. xix. Now to exercise your selfe in Numeration, number with your selfe these summes following, as they be here set forth in this Table. Whych notyng it well, it shall easely teache you both to know the valew of the places, and also the summe of every figure.

The description of this Table following.

This Table (as you may see) hath eight places, and in eche of them are set all the Digets, whose certaine value is wyrtten on the ryght hand of the Table, and the value vncertain on the leaft hand. So that hereby you may learne how to expresse any number that you wyll.

The

The Table.

The deno- minatours of the pla- ces or va- lue vncer- taine.	Unities.	Tennes.	Hundredthes	Thousandths.	£. thousand.	£. thousand.	Millions.	£. Millions.
---	----------	---------	-------------	--------------	--------------	--------------	-----------	--------------

1	1	1	1	1	1	1	1	One.
---	---	---	---	---	---	---	---	------

2	2	2	2	2	2	2	2	Two.
---	---	---	---	---	---	---	---	------

3	3	3	3	3	3	3	3	Three.
---	---	---	---	---	---	---	---	--------

4	4	4	4	4	4	4	4	Four.
---	---	---	---	---	---	---	---	-------

5	5	5	5	5	5	5	5	Five.
---	---	---	---	---	---	---	---	-------

6	6	6	6	6	6	6	6	Six.
---	---	---	---	---	---	---	---	------

7	7	7	7	7	7	7	7	Seven.
---	---	---	---	---	---	---	---	--------

8	8	8	8	8	8	8	8	Eyght.
---	---	---	---	---	---	---	---	--------

9	9	9	9	9	9	9	9	Nine.
---	---	---	---	---	---	---	---	-------

0	0	0	0	0	0	0	0	Cipher.
---	---	---	---	---	---	---	---	---------

The order of the pla- ces.	First.	Second.	Thyrd.	Fourth.	Fift.	Sixth.	Seuenth	Eyght.
----------------------------------	--------	---------	--------	---------	-------	--------	---------	--------

Cur

Of Numeration.

Furthermore thou must note that there be in Algorithm three maner of numbers, Diget number, Article, and Compost.

The diget number is all maner of numbers which are vnder .x. as these.

9 8 7 6 5 4 3 2 1

The Article number is, all numbers whych are of .x. as these.

10 20 30 40 50 60 70 80 90

The compounde number is all maner of numbers whych are compounde or made of the Diget and article together, as foloweth.

11 12 13 14 15 16 17 18 19
21 22 23 24 25 26 27 28 29
31 32 33 34 35 36 37 38 39

And so forth of all other. Thys is sufficient for the knowledge of number in Algorithm.

The end of Numeracion.

The

C The second part called Addition.

Addition is a collection of diuers
and sundry sums into one totall
sum, which containeth as much
in him as all the other sums, beyng be-
fore sundry. In Additiō are two num-
bers to be considered, the one is, the nu-
bers which must be adioyned together
the other is, the numbers which re-
doundeth of their addition together,
which otherwise is called the total sum.
Then when ye wil adde many sums to-
gether, first write them faire the one di-
rectly vnder the other, so that the first
figure of the one, be right vnder & first
of the other, and the second vnder the
second, every place correspondent vn-
der other. That done, draw a lyne vn-
der all these seuerall sums, as is to see
in the example following. And when
you wyl adde your numbers together,
begyn at the first places of your sums,
and adde all the figures that ye see in
the first places of all your sums toge-
ther, & that that cometh of the additiō,

Of Addition.

whether it be Diget number, article, or
compost: If it be but Diget, set that Di-
get beneath the line, directly vnder the
same first places. If it be article, put a
cipher beneath þ lyne, right vnder the
same first place, & reserue the article to
be added to the next places of thy sum-
mes, & there do likewise. If it be com-
post, set the Diget vnder the lyne, right
vnder the same places, & reserue the ar-
ticle in your mynde, adding it lyke wise
to the next places of thy summes. Whe-
the figures stāding in the last places of
your sums be adioyned together, if any
article or articles remain, set the down
next to þ figure ye set last before vnder
the same lyne, as here for example.

The fyrst summe.	6	7	8	9	4	
The second summe.	3	4	5	6	7	
The third summe.	2	3	4	5	6	
The fourth summe.	7	8	9	3	4	
The fyft summe.	6	7	4	2	5	
The syxt summe.	3	4	3	2	2	
<hr/>						
Summa totalis.	3	0	6	5	9	8
						Pour

Of Addition.

Your figures set after this sort, adde
all the figures that ye fynde in the first
places of all the summes together, be-
gynnyng at the nethermost saying: 2 &
5 is 7, and 4 that is 11, and 6 that is 17,
and 7 that is 24, and 4 that is 28. Thys
is the whole summe of the figures ad-
ded together, whych be founde in the
fyrst places, the which number is com-
post. Wherefore as it is in your rule, ye
muste drawe a lyne vnder the whole
summe, setting the diget ryght vnder
the same place, beneath the lyne, the
which is 8, and keepe the articles in
your mynde, which is 2. Nowe to the
second place, toward the left hand, say:
2 that I haue in my minde and 2 is 4,
and 2 maketh 6, and 3 is 9, and 5 is 14,
and 6 is 20, and 9 is 29, now set the 9
vnder 2, and keepe 2 in minde, & adde
them to the firste fygure of the thirde
place, which is 3. Now say, 2 and 3 is
5, and 4 is 9, and 9 is 18, and 4 is 22,
and 5 is 27, and 8 is 35. Now set 5 vn-
der

Of Addition.

Der 3, and keepe thzee in mynde. Now
 to the .iiii. place toward the least hand,
 wher 4 standeth, now 3 that you haue
 in mynde and 4, is 7, and 7 is 14, and 8
 is 22, and 3 is 25, and 4 is 29, and 7 is 36
 set 6 vnder 4, & kepe 3, and adde that 3
 to the vndermost figure of the sixt sum
 that is 3, and say 3 and 3 is 6, and 6 is 12,
 and 7 is 19, and 2 is 21, and 3 is 24, and
 6 is 30. All the figures of this place ad-
 ded together as you see, maketh article
 number, wherfoze according to your
 rule set a cipher 0 vnder that place be-
 neath the line, and the article which is
 3 next to the same cipher, and al is fini-
 shed. And al these summes thus collec-
 ted together, maketh 306598.

An other example of Addition.

1	0	0	6	6	7	8	4	5
6	0	0	0	3	1	9	5	0
5	0	0	5	4	5	1	6	1
			8	0	1	2	0	2
					6	4	2	1
<hr/>								
1	2	0	2	0	5	2	5	7
								9

Begyn

Of Addition.

Begyn firste as ye dyd before, at the first places adding them altogether, beginning at the nethermost, saying: 1 & 2 is 3, and 1 is 4, and 5 is 9, thys is the whole summe of the figures standyng in the first place, the which is Diget number, and therfore according to the rule, set it right vnder y^e same place beneath the lyne. Then procede to the second place, and begyn at the nether end saying: 2 and 6 is 8, and 5 is 13, & 4 is 17, thys number is compost number, therfore set the Diget right vnder that place beneath the line, which is 7, resetyng the article in your mynde, and so to the third place, saying: 1 that I haue in my mynde and 4 is 5, and 2 is 7, and 1 is 8 and 9 is 17, and 8 is 25, this number also is compost, wherefore set the Diget 5 vnder that third place, & reserue the article 2 in mynde to the next place, then to the next place saying: 2 that I haue in mynde & 6 is 8, and 1 is 9, and 5 is 14, and 1 is 15, and 7 is 22, this is also compost

B.i. post

Of Addition.

post, therefore set the Diget 2 vnder that
iiii. place, and reserue the article 2 to the
next place. Then to the fift place saying
2. that I haue in mynde and .4. is .6. &
3 is .9. and 6. is .15, thys is also compos
number, set the Diget .5. vnder the fyf
place, and kepe the article in minde. To
the .vi. place sayinge .1. that I haue in
mynde and .8. is .9. and .5. is .14. and .6.
is .20, this is article number, therefore
accoꝝdꝝng to the rule set cipher vnder
the place beneath the line, & kepe the ar
ticle in mind, and come to the .vii. place
in y^e which places because thou findest
nothing but ciphers, to the which thou
mightest adioine thy article reserued, y^e
which was .2. therefore vnder the same
vii. place set that same reserued .2. and
then come to the .viii. place, and ther fin
dest y^e nothing but ciphers, wherfoze
vnder the same place set beneath y^e line
a cipher, accoꝝdꝝnge to the rule. Then
come to the .ix. place & say: 5. and .6. is .11.
and .1. is .12. the whych is compos
ber,

OF ADDITION.

ber, therefore set the Diget which is 2 vn-
der the lyne, and reserue the article in
minde, which is 1, now because there
is no mo places whereunto ye myght
adde this reserued article, therefore ac-
cording to your rule ye shal set it down
next vnto the figure that ye dyd set vn-
der the lyne laste, as in your example.
These twoo examples were sufficient
inoughe to the readynes of Addition.
howbeit yet that it may be the plainer,
I wyl set downe an other example.

1 4 6 9 9 0 0 0	<div style="display: inline-block; vertical-align: middle;"> <p>Adde the fyrste place together. first there thou fyndest nothig but ciphers, wherefore set a cy- pher vnder the line and so lyke wyse in the second place. In the thyrde place thou fyndest 6 and 2, which maketh 8, the which for because it is Diget number, set it vnder that place beneath the lyne.</p> </div>
3 8 2 9 0 2 0 0	
0 1 0 9 1 6 0 0	
1 0 2 0 0 0 0 0	
<hr style="border: 0; border-top: 1px solid black; margin: 0;"/> 5 5 1 0 0 8 0 0	

B.ii.

In

Of Addition.

In the .iiii. place is 1 and 9 whych makeeth 10, and because that this is article number, set a cipher vnder that place, beneath the line, and reserue the article to the next place saying: that I haue in my mynde and 2 is 3, and 9 is 12, & 9 is 21, and 9 is 30, this is also article number, wherefoze set a cipher vnder that place beneath the line, & reserue the article 3 in mynde to the next place. Then come to the .vi. place saying: 3 that I haue in my mynde and 2 is 5, and 6 is 11, thys is compost number, therefore I set the diget whych is 1 ryght vnder that place beneath the line and reserue the article 1 to the next place, saying: 1 and 1 is 2, and 1 is 3, and 8 is 11, and 4 is 15, thys is also compost, therefore set the diget 5 vnder the lyne, and adde the article reserued to the figure in the next place, saying: 1 and 3 is 4 and 1 is 5, thys is now called Dyget number, therefore set it vnder the lyne, and then all is finished.

¶ Cera

C Certayne examples to practice your selfe in, touching the exercise of Addition.

16768900	10000000
36219880	13456289
92000032	20020101
11116841	10000000
19421326	38921000
<hr/>	
175526979	92397390
9090201000	6400000
2651260000	8600000
25432071	9980000
21654000	7800000
9620001	5900000
1000	1000003
<hr/>	
11789520072	3968003
900026	3000268
205812	1060986
901000	1000939
909609	1000939
1000000	2000917
<hr/>	
3016447	8064049

Of Addition.

Of the profe of Addition.

For the profe of Addition, ye shall make a Crosse after the fashion that followeth, and then ye shall come fyrst to the addible summes, and plucke out all the nines that ye fynde there, and the rest what soever it bee, that wyl not make 9, set it at the vpper syde of the Crosse. Then come to the total summe vnder the lyne, and lyke wyse deduck all the nines that ye can fynde there, and that that remaineth, not able to make 9, set it at the vndermost part of y^e cros, and if it be like the remenant of the addible number which standeth in the vpper part of the Crosse, your worke is good, if not, it is nought, as by example ye shall the better perceiue.

An example of the profe.

A	2	5	0	6	7	0	0	0
B	3	3	0	4	2	8	0	1
<hr/>								
C	5	8	1	0	9	8	1	0

Now

Of Addition.

Now for to make the proofof these numbers, ye shall begyn at the first fy-
gure that ye haue made, in saying: 8 &
0 is 8, and 2 is 10, take away 9, then
ther resteth 1, then 1 & 7 is 8, and 4 is
12, take away 9 rest 3, then 3 & 6 is 9,
thē to the two ciphers of nothing, that
nothing do signify, then 3 and 5 is 8, &
3 is 11, take away 9, rest 2, then 2 and
2 is 4, this 4 it behooueth you to put
at the neather ende of the crosse. Then
come to the place of C vnder the lyne,
& say 8 (ye shall leaue the 9 & the cipher
0 that is nothing woꝛth) and adioyne
1 thereto and make it 9, & leaue that, thē
8 & 5 is 13, take away 9 rest 4, which
4 ye shall put at the vpper ende of the
crosse, and then is your proofof good, for
both y ends be like as ye
see in thys fygure of the
crosse. And at the two o-
ther endes ye shall put .ii.
00, in certifying that of
them commeth nothyng.

B.iii.

Can



Of Addition.

¶ Another example.

A	7	8	9	1	5	4	3	2	6	li.
B	4	9	3	0	0	6	7	1	5	li.
C	2	0	9	9	3	4	7	8	4	li.
D	4	6	0	6	4	5	5	3	0	li.
E	9	3	6	4	5	8	7	7	8	li.
F	4	4	5	1	9	3	0	0	1	li.
G	3	3	3	4	3	9	3	1	3	4 li.

We shall say semblably 1 and 8 is 9, & alwayes leaue them, then 0 that doth nothing, then 4 & 5 bene 9, than 6. The we shal retorne to the tenthes, & shall fine 0, that doth nothing, then 7 that makech 9 rest 4, then 3 bene 7, then 8 ben 9 rest 6 then 1 is 7, then 2 is 9. The come to the place of hundrethes, then 0 is nothing worth, then 7 and 5 is 9 rest 3, then 7 is 9 rest 1, then 7 is 8 and 3 is 9 rest 2. Then come to the place of thousandes, and adioyne the 2 to the 3 that is 5, then 8 is 9 rest 4, & so consequently vnto the ende. And if peradventure we
fynde

Of Addition.

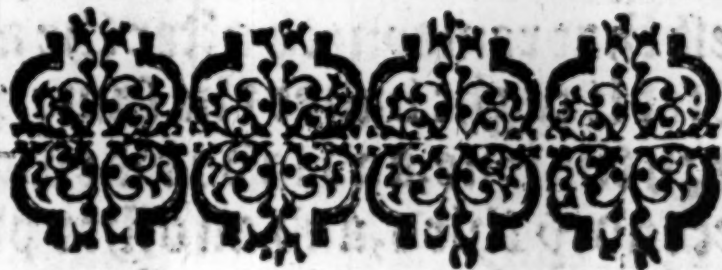
fynde thys fygure 9 because of the brief
nes, we shall leaue it. And shall fynde at
the ende 9, therefore we shall put at the
ende of the crosse o, in signifying that
there is nothing aboue 9. And so shall
we do in the number of G. and we shall
fynde lyke 9, for the which
semblably we shall put o.
And so is the Addition o
good and well made.

CThe prooffe.

As touching of Addition in broken
numbers, ye shall fynde that vnder the
tytle of Reduction hereafter.

CThe ende of Addition.

COf



The thyrd part called Subtraction.

Subtraction is a maner of abating or subducting a lesse sum out of a greater, or lyke of lyke, shewing what remaineth.

In Subtraction are twoo numbers, the fyrste is the number abated, the second, the number abating.

Then when ye woll subtract any one number out of an other: fyrst ye shall wyte the number to be abated, and vnder it directlie figure vnder figure, and place vnder place wyte the abatour, & beneath these twoo summes drawe a lyne, then begyn your Subtraction at the first places, and subduct the figure standing in the first place of the abatour, of the first figure standing in the fyrste place of the number to be abated, and the rest that remaineth after the abatement set it ryght vnder the same place beneath the lyne, and so do lyke wyse in the second, y third, and all other places And when ye haue al done, the number that

Of Subtraction.

that shal remaine vnder the lyne, shall be that that remaineth after the subtraction of the abatour of the number abated. As for example.

Lent.	8	3	4	5	6	I lent a mā	8	3	4	5	6
Paied.	4	1	1	3	1	li, of the whych hee					
Rest.	4	2	3	2	5	hath paid me	4	1	1	3	
						li. againe, now I de					

syze to knowe howe much remaineth. Then according to the rule, fyrst I set the lent money, & right vnder that I set the repayd money figure vnder figure, and place vnder place, as ye see by the example. Under both these summes I must draw a line, and begin to subtract the vnder sum out of the vpper, saying: 1 out of 6 remaineth 5, this 5 I remaineth according to the rule set vnder the same place beneath the line, then to the second place, pluck 3 out of 5, remaineth 2, set 2 vnder the lyne, then to the third place, pluck 1 out of 4 remaineth 3, set that vnder the lyne: then to the fourth place,

Of Subtraction.

place, take 1 out of 3 remayneth 2, set it vnder the lyne: the the fyft place, take 4 out of 8 remayneth 4, set that also vnder the line, and so thou haste finished. Then thou shalte vnderstande that if which is vnder the line is the remanā of the money not yet payd.

An other example.

87660 li. Begyn at the fyft place
 67560 li. saying: 0 out of 0 remayneth nothyng, set the figure of nothyng vnder the lyne: then to the second place 6 out of 6 remayneth nothyng, set the cipher vnder the lyne: Then to the thirde place 5 out of 6 remayneth 1, set 1 vnder the lyne: Then to the fourth place 7 out of 7 remayneth nothyng, set the figure of nothyng vnder the lyne. Then to the fyft place, take 6 out of 8 remayneth 2, set 2 vnder the lyne, & thus thou haste done. The 20100 remaineth yet to be paid. Now thou shall note that sometyme it chaun-

Of Subtraction.

It chaunceth that the fygure standyng
beneath is greater then the figure stan-
dyng aboue hym, in the summe from
whom subductiō is made. In this case
thou shalt in thy mynde put ten, to the
fygure in the vpper summe, and then
subtract the neather figure out of the
same, set the remanant vnder the lyne,
and for the same ten & which thou did
dest put to & vppermost figure to make
him greater, thou shalt adde one to the
next fygure standyng in the neather
summe, and then subtracte that lyke
wyle oute of the figure aboue him (if
the fygure aboue be bygger then the fi-
gure beneath with his addition, ether
els equal) and that remayneth, set it vn-
der the lyne, as ye did in the other ex-
ample. If the figure aboue be lesse thē
the figure beneath, thē do to him as ye
dyd to the other before, that is to saye:
adde ten to him, & so forth in all other
places: Wher the neather figure of the
abafour is greater then the vpper fy-
gure

Of Subtraction.

figure from whence it should be abated, as by this example ye shal more clearly perceyue.

Example.

$$\begin{array}{r} 57295490 \\ 48765297 \\ \hline 08530193 \end{array}$$
 Begyn your subtraction saying: 7 out of 0 that can not be, therefore for because that 7 standyng in the neather summe, is more then the fygure standing in the fyrst place of the vpper summe, ye must adde a tenne, then deduck your 7 out of 10, and ther remaineth 3, then come to the second place, and for the ten that ye borrowed in your minde, & added it to that figure in the first place to make it byg inough for the fygure vnder it to be subducted out of it, for the same ten (I say) ye shal put to the next fygure in the neather place of the neather sum 1, then say 9 & 1 is 10, then subduck this 10 out of the figure of 9 standing aboue it in the vpper summe, & that ye cannot, therefore

Do

Of Subtraction.

do as you dyd befoze in the fyrst place,
put 10 to the .9. in your mynde, saying:
10. and .9. is .19, then Deducke the .10. be-
neath out of the .19 above, & ther remai-
neth .9. to be set vnder the lyne. Then
to the figure standing in the thirde place
in the neather summe, put .1. for the ten
that you borrowed in your mynde, the
which ye added to .9. in the second place
of the vpper sum to make it greater, sai-
yng: 1. and 2. is 3, subtract that .3. out
of .4. above it, remaineth .1. to be set vn-
der the lyne. Then to the fourth place,
take .5 out of .5 remaineth nothing, set
a figure of nothing vnder the lyne, and
come to the .v. place take .6. out of .9. re-
maineth .3. to be set vnder the lyne, so
to the .vi. place, take .7 out of .2. that can-
not be, therfoze put to the same .2. accor-
dyng to thy rule .10, & then it is .12. then
subduck .7. out of .12. remaineth .5. to be
set vnder the lyne, & for y same 10 that
thou borrowedst in thy mynde to put
to thy fygure of .2. in the vpper summe,
thou

Of Subtraction.

thou shalt adde 1 to the figure standing in the next farther place in the neather sum, coming to the same place whych is the seuenth place, saying 8 and 1 the which I haue to set to him is 9, then 9 out of 7, that I cannot, wherefore lyke wyle agayne I must helpe the same 7 with a ten, and then it is 17 out of that now subtract your 9 and remayneth 8 to be set vnder the lyne: nowe as you haue done before in all other places for the 10 here borrowed and adioyned, the adde 1 the next figure standing in the seuenth place of the neather number, saying: 4 and 1 is 5 then subduct thys 5 out of the 5 aboue, and remayneth nothing, wherefore set a figure of nothing beneath the lyne, and so ye haue done.

How be it ye shall note that when ye haue a cipher to be wyrtten in the last place of any summe, ye shall not wyte it, for in the last place it signifieth nothing of it self, neither doth it augment the signification of any of the other.

Yet

Of Subtraction.

Yet one other example wyl we set, & then make an end of Subtraction.

1000081007100 Ye shall begyn
484057480087 saying: 7. out of
 5160235270130, that cannot be,
 for ye cannot take

7 out of nothing, wherefore as ye haue
 done alwaies in the example afoze, put
 ten to that cipher, & that maketh 10. the
 deduck your 7 out of it now, and there
 remaineth 3 to be set vnder the lyne.
 Then for this ten that ye ad to the cy-
 pher in the first place of your vpper nu-
 ber, set 1 to the figure standing in the se-
 cond & next place of the neather number
 saying: 8 and 1 is 9, then 9 out of the cy-
 pher aboue, that cannot be, therfore as
 ye dyd besore make that 0.10, and then
 subduck your 9 out of this added 10, re-
 mayneth 1 to be set beneath the line, the
 for this 10 lyke wyse that you borrowed
 in the second place of your vpper num-
 ber, ye shal set one to the next figure sta

C.i.

dyng

Of Subtraction.

Dyng in the thirde and next place of the
neather summe, saying: 1 and the 0 is
one, then take that 1 out of 1 above him
remayneth nothing, set a figure of no-
thyng beneath the line, then to the iiii.
place take the 0 out of 7 above remay-
neth 7 styl to be set vnder the lyne. So
to the .v. place, take 8 out of 0 that ye can-
not, therfore put 10 to the cipher & then
subduck it, and remaineth 2, set that vn-
der the lyne: for thys ten adde 1 to the
next fygure in the .vi. place, which is 4.
then 4 and 1 is 5, and 5 out of 0 that ye
cannot, then make 0 10. & take the 5 out
of it remaineth 5 to be set vnder: the for
the borrowed tenne, lyke wyse set 1 to the
next figure in the .vii. place of the nea-
ther number 1 saying: 1 and 7 make 8, &
8 out of 1 that cannot be, therfore put
ten to that 1, and then 10 and 1 is 11, out
of this 11 deduck your 8, remayneth 3 to
be set vnder the lyne: then for this 10 to
the next figure in the .viii. place of the
neather summe, set 1 saying: 5 and 1 is 6,
then

Of Subtraction.

he then 6 out of 8 remaineth 2, then to the
ix. place, take 0 out of 0 remaineth also
0, set that vnder the lyne, in the .x. place
take 4 out of 0 that cannot be : therfore
put 10 to that 0 and subduck your 4, res
maineth 6, the to the figure in the next
place which is the .xi. place, put 1 saying
8 & 1 is 9, then 9 out of 0, that cannot be
therfore put ten to it, and then subtrah
your 9 out of 10 remaineth 1, set it vns
der the lyne: for his borrowed ten put 1
agayne to the next figure which is 4,
saying: 4 & 1 is 5, 5 out of 0 that cannot
be, therfore likewise againe make it. 10
and then take 5 out of it, remaineth 5,
the again for your borrowed 10 put 1 to
the next place. But because there be no
mo places, therfore subtragh it alone
out of the figure aboue, saying: 1 out of
1 remaineth nothing, therfore nothing
is to be set vnder the lyne, not so much
as a cipher, for because that it is in the
last place. So then the summe vnder
the line is the remaine that remaineth,

Of Subtraction.

after the subtraction of the lower sum,
out of the vpper summe.

[The prooofe of Subtraction.

The prooofe whether ye haue subtrac-
ted wel or no, ye must adde the remain
to the number payd, and if they twaine
added together doo make the first sum
lent completiue, then is it wel subtrac-
ted: if not, it is not well subtracted, as
by the last example ye maye well per-
ceyue. For by the rule of Addition adde
3 to 7 therof comineth 10, set the cipher
vnder the lyne, and reserue the article
to the next place forth according to the
rule of adition, and thou shalt see
these two summes added toge-
ther, to come to the fyrst
lent sum. And this
of Subtractiō
shalbe suffi-
cient.

(.)

[Of

The fourth part called Multiplication.

Multiplication is a maner of encreaseinge or augmentynge one sum by another. In thys feate of multiplication are.iii. numbers to be noted, the multiplied number, the multiplier, and the number that redoundeth of the multiplication of the multiplied number by the multiplier, as in example. Multiply this number 4 by 3, and therof come 12, 4 is the number multiplied, 3 is the number multiplier, and 12 the thirde number that redounded of the multiplication of one of these numbers by the other. Then for more experience & readye woorking in this kinde of operacion, ye shall perfectly know by memory the multiplicatiō of one Diget by an other, the which ye shall haue here in this table folowing. Of the which one Diget ye shall looke for in the heade of the table, and the other on the leaste syde of the Table.

C.iii.

The

The Table.

1	2	3	4	5	6	7	8	9	10
2	4	6	8	10	12	14	16	18	20
3	6	9	12	15	18	21	24	27	30
4	8	12	16	20	24	28	32	36	40
5	10	15	20	25	30	35	40	45	50
6	12	18	24	30	36	42	48	54	60
7	14	21	28	35	42	49	56	63	70
8	16	24	32	40	48	56	64	72	80
9	18	27	36	45	54	63	72	81	90
10	20	30	40	50	60	70	80	90	100

By this table ye shal sufficiētly learne
to multiply one Diget bi an other, as for
example. If ye wil multiply 9 by 5, loke
for the 9 at the head of the table, & for 5
y multiplier at the left side of the table,
then with thy finger descend down fro
the place wher 9 standeth til y come be
fore the place wher the 5 stādeth, & ther
in the same angle y shal find 45, & that
cometh of 5 times 9, & thus by al other.

Ther

Of Multiplication.

There is also a proper rule for the multiplication of one Diget by an other, & it is this whē thou wilt multiply one Diget by an other, note the Distance of the greater Diget from 10, & by the same Distance multiply the lesse Diget or equal, & that þ̄ procedeth of it, deduct out of þ̄ article whom the lesse number doth Denominat, & the rest is it that ye seeke for, as for example: if ye wyl multiply 7 by 5, first se þ̄ Distance betwene 7 which is the greater number & 5, and that is by this 3 multiply 5, & that is 15, the Subduct this 15 out of the article that 5 that lesse number doth Denominate, whych is 50, then remaineth 35 that is 5 times 7: so like wylse shal ye do if the multipliar and the multiplied be like. Now be it most ready it is to know wout boke very perfectly þ̄ multiplicatō of euery Diget one in an other. Now when ye wyl multiply any one nūber the one by the other, first write faire your nūber to be multiplied, & vnder it þ̄ multiplicatour

Of Multiplitation.

beneath both theese summes, ye shall draw a line. Then shal ye consider whether your multiplier bee a Diget or article, or els compost number. If it be Diget nūber, ye shall begin to multiply by the Diget the figure or Diget stāding in the firste place of the number to bee multiplied, and that that commeth of it if it be but a Diget, set it vnder the lyne, ryght vnder the same place, and then proceede further to the next place, and multiply the figure standing in þ place by the same multiplier, and that that redoundeth of it, if it be a Diget, set it like wyse vnder the lyne, ryght vnder the same place, and so doo lyke wyse in euerye place folowynge, vntyll suche tyme as all the figures standynge in euerye place be multiplied. Then that whych shall bee founde vnder the lyne, is the summe comynge of the multiplicatiō of these twoo numbers, the one by the other. As by example ye shall the better perceiue.

It

Of Multiplication.

2 3 1 4 If ye wil multiply this
 2 sum 2314. by thys 2, ye
 4 6 2 8 shall set your figures af-
 ter this sort, as ye see the.

Begyn your multiplication saying: 2
 tymes 4 is 8, set that 8 vnder the lyne,
 then come to the next place and say: 2
 tymes 1 is 2, set it vnder the lyne, then
 to y^e third place, 2 tymes 3 is 6, set that
 vnder the lyne, so to the fourth place 2
 tymes 2 is 4, set that vnder the lyne al-
 so, and then thou hast done, so that this
 number 4 6 2 8 vnder the lyne, is it
 that commeth of the multiplication of
 thys summe 2314 by thys number 2.
 But if it bee so that in the multiplica-
 tion of any figure in the number mul-
 tiplicable, by the multiplier y^e it whych
 redoundeth of it be article number: the
 ye shall set acipher beneath the lyne
 ryght vnder the same place where the
 multiplicatiō is, and reserue the article
 to be added to the number that procees-
 deth of the multiplication of the figure
 in

Of Multiplication.

in the next place by the aforesaid multiplier, the which lykewise if it amount to an article, do lykewise as I bad you to do in the fyrst place: but if it be composed number, then shall ye set the dyget vnder the same place beneath the lyne, and reserue the article to be added like wise, as is before saide of article number, as in thys example.

8 1 4 1 6 4 2	5	
<hr style="border: none; border-top: 1px solid black; width: 100%;"/>		
4 0 7 0 8 2 1 0		8 1 4 1 6 4 2

If ye wyll multiplye thys number by this figure 5: Begin at the fyrst place saying : 5 tymes 2 is 10: now because that thys number is article, ye shall according to the rule before, set the 0 vnder the line, and reserue the article 1 to be added to the number that procedeth of the multiplication of the next figure, standing in the next place of the sum multiplicable, by the multiplier: so then come to the next place saying : 5 tymes 4 is 20, to thys 20 adde 1 for y article that ye reserued, and that maketh

Of Multiplication.

maketh 21, therfore because p this is
a composit number, therfore set the Dy-
get vnder the lyne, beneathe the same
place, and reserue the article to the next
place. Then come to the third place say-
ing: 5 tymes 6 is 30, to this ad the artis-
cle 2 which ye reserued in p place next
before, and then it is 32, set the Dyget
vnder the lyne as ye Dyd before reser-
uyng the article to the next place: then
com to the fourth place saying: 5 tymes
1 is 5, to thys adde the article reserued,
which is 3, and that maketh 8, set this
Diget number vnder the line, and then
come to the .v. place saying: 5 tymes 4
is 20, now because this number is ar-
ticle, set a 0 vnder the place beneathe
the lyne, reseruing the article 2 to be ad-
ded vnto the next places: Then come
to the .vi. place, saying: 5 tymes 1 is 5, to
thys adde the article 2 reserued, & then
it is 7, set it vnder the lyne, then to the
seuenth place, saying: 5 tymes 8 is 40.
nowe because it is an article number,
ye shall

Of Multiplication.

ye shall set a cipher vnder the lyne and reserue the article 4 to the next place, & for as much as there is no mo places, ye shall set thys 4 vnder the lyne nexte vnto the 0 that ye set before last, and then ye haue Done.

When that your multiplier is composed of article number, the shall ye take the first figure of your multiplier, & by him shall ye multiply all the figures of the multiplicable numbers, setting alway that that amounted of it beneath the lyne as ye dyd before. And when ye haue multiplied the number multiplicable by the first figure of the multiplier: then multiplye it agayne by the second figure of the multiplier, settinge euermore the first figure of the number multiplye directly vnder the figure multiplicatour, in what place so euer it stand: and the number multiplicable is multiplied by al the figures of the multiplicatour, then make a stryke vnder them al, adding al the numbers multiplye

Of Multiplication.

licate together as they stande, & that which procedeth of that additiō, is the number multiplicable, now multiplied by the whole number multiplicatour, as by thys example ye shall playnly perceyue.

	2	3	4	5	
	1	2	3	4	
<hr/>					
	9	3	8	6	
7	0	3	5		
4	6	9	0		
2	3	4	5		
<hr/>					
2	8	9	3	7	3
					0

E If ye will multiply this number 2345 by this number 1234, set them fyrst as ye see here 2, vnder them draw a lyne, then begyn woth the fyrst figure of the multiplicatour, whych is 4, and by him first according to the rule multiply all the multiplicable number thzoughout saying: 4 tymes 5 is 20, set the cipher vnder the lyne, reseruing the article 2 to the next place. Then to the seconde place 4 tymes 4 is 16, to that put your reserued article 2, and it is 18, set

Of Multiplication.

set the Diget 8 vnder the line, reseruing
the article 1. Then to the thyr^d place 4
tymes 3 is 12, and 1 reserved from the
place before that is 13, set the Diget 3 vn
der the lyne, reseruing the article 1, the
to the fourth place 4 tymes 2 is 8, and
1 reserved is 9, set that Diget 9 vnder
the lyne, and so haste thou multiplid
this number multiplicable by the ~~first~~
first figure of multiplicatour, Now then ac
cording to the rule afore multiplie the
multiplicable number by the second fi
gure of the multiplicatour, saying: 3
tymes 5 is 15, set the Diget 5 vnder the
lyne, according to the rule, whych byd
deth to set euermore the fyrst figure of
the n^uber multiplycate vnder the place
where the figure multiplicatour dothe
stande: as here nowe thou multipli
est the multiplicable by the seconde
figure of the multiplicatour, whyche
is 3, then say: 3 tymes 5 is 15, set this Di
get 5 vnder the lyne, and beneathe the
fyrst number multiplycate, ryght vnder
the

Of Multiplication.

the figure multiplicatour, as thou seest
in the example, and reserue the article 1
then to the second place of the multipli-
cable, 3 tymes 4 is 12, and 1 that is res-
serued is 13, set the dyget 3 vnder the
lyne, as ye see in the example, & reserue
the article 1, and so to the thyrde place, 3
tymes 3 is 9, and 1 reserued is 10, set a 0
vnder the lyne, and reserue the article 1.
So to the .iiii. place saying: 3 tymes 3
is 6, and 1 reserued is 7, set it vnder the
lyne, thus haue ye done your multipli-
cation by the second figure of the multi-
plicatour 3. Then take the thyrde figure
of multiplicatour, whych is 2, and mul-
tiply also all the numbers multiplicas-
ble by hym saying: 2 tymes 5 is 10, set
the 0 beneath the lyne, right vnder the
place, tohere this figure 2 the multipli-
catour standeth, as ye se in the example
& reserue the article 1, then to the second
place 2 tymes 4 is 8, & 1 reserued is 9,
set þ 9 vnder the line: the to þ .iii. place,
2 tymes 3 is 6. set that vnder the lyne.
So

Of Multiplication.

So to the fourth place saying: 2 times 2 is 4, set that 4 vnder the lyne. Now begyn to multiply with the fourth and last figure of þ multiplicatour, saying: 1 tymes 5 is 5, set the 5 vnder the lyne, as I sayde before, and as ye see in the example, then to þ second place, 1 times 4 is 4, set that 4 vnder the lyne, then 1 tymes 3 is 3, set that 3 vnder the lyne, then 1 tymes 2 is 2, set that 2 vnder the lyne, and ye haue done your multiplication. Then must ye adde accordyng to your rule afore al thys single multiplied number together, and that which cometh of the addition, is the number that cometh of the multiplication of thys number 2 3 4 5, multiplicable by the number 1 2 3 4, multiplicatour. Then come to the fyrst place, & se what is there, and there ye shal fynde a 0, set it vnder the lyne, and so to the seconde place, there ye shal fynde 5 and 8 whych is 13, set the dyget 3 vnder the lyne, reseruyng the article 1 to be added to the
next

Of Multiplitation.

next place : then come to the .iii. place, there is 0, 3 and 3 which is 6, to that adde the reserved 1, and that is 7, set that 7 vnder the line, now to the fourth place 5.9.0. and 9. maketh .23. set the 3 vnder the lyne, reserve the article 2. So to the v. place, 4.6. and 7 is 17, to that adde the reserved 2. which maketh .19, set the 9 vnder the lyne, and keepe the article 1 in mynde. Then to the .vi. place .3 and 4 is 7, and 1 reserved is 8, set it vnder the lyne : Then to the seventh place there fynde ye but 2, wherefoze sette it vnder the lyne, and then haue ye Done. So that thys summe vnder the lyne 2893730 is the whole number multiplicat.

¶ Here foloweth an other example of Multiplification.

D.i.

21

Of Multiplication.

A	6426003
B	502000
<hr style="border: 1px solid black;"/>	
	0000000
	0000000
	0000000
	12852006
	0000000
	32130015
<hr style="border: 1px solid black;"/>	
C	322585356000

Your figures set after this sorte, A. is the multiplicable number, B. is the number multiplicatour, C. is the number multiplye, which commeth of the addition of al the seueral numbers together standing betwene the lines. Begyn then your woork, taking the first figure of B. the multiplicatour, whych is 0, & by him multiply al the figures of A. the multiplicable, & that that procedeth of it, set vnder the lyne as ye see, & so to the second figure of the multiplicatour, which is also 0, multiply al the figures

Of Multiplication.

figures of A. by it lyke wyse, & set that which cometh of it, vnder y line, right vnder the second place where the multiplicand figure standeth. Then to the third figure, which is also 0, multiplie all the multiplicable number A. and set that which cometh of it right vnder the thyrde place beneath the lyne, as ye see plaine in your example. For of the multiplicatiō enermore by ciphers cometh nothyng but ciphers. Nowe to the .iiii. place of B. the multiplicatour, ther shall ye fynde the figure 2, multiply then al A the multiplicable nūber by this figure 2 saying: 2 tymes 3 is 6, set that 6 vnder the line, right vnder the place wher the multiplicatour 2 standeth, as it appeareth in your example. Then to the .ii. place, 2 tymes 0 is nothyng, set that 0 vnder the lyne, next the aforesayd 6, and so to the thyrde place, 2 tymes 0 is nothyng, set the figure of nothyng done vnder the lyne, and so to the fourth place, 2 tymes 6, is 12, sette the

D.ii. Diget

Of Multiplication.

Dig^{et} 2 vnder the lyne, and reserue the article 1 to the nexte place. Then come to the fyft place, 2 tymes 2 is 4, and 1 that I reserued is 5, set that 5 vnder the lyne. Nowe come to the sixt place sayng: 2 tymes 4 is 8, set that 8 vnder the lyne. So to the .vii. place, 2 tymes 6 is 12, set the Dig^{et} 2 beneath the lyne, and reserue the article 1 to be set in the next and last place, as ye see in the example. Thus haue ye multiplyed A. the multiplicable by .iiii. figures of B. the multiplicatour, therfore now take o the .v. figure of the multiplicatour, & by it also multiply al the figures of A. the multiplicable, & thereof shall come al ciphers to be set vnder the line, as ye see here in the copy. Then to the .vi. figure of B. the multiplicatour, which is 5, by this 5 also multiplie all the figures of A. the multiplicable, saying: 5 tymes 3 is 15, sette that 5 beneath the lyne, right vnder the syxte place, where 5 the multiplicatour standeth, as is to see in the copy

Of Multiplication.

copy, and reserue the article to the next place. Then come to the second place & sai: 5 times 0 is nothing, set the 1 which ye reserued in your mynde vnder the lyne, and so to the third place, saying: 5 times 0 is nothing, set the 0 vnder y^e lyne. Then to the fourth place saying: 5 tymes 6 is 30, set the cipher vnder the lyne, reseruyng the article 3 vnto the next place. Then come to the .v. place saying: 5 tymes 2 is 10, and 3 that I reserued is 13, set y^e diget 3 vnder the line, and reserue the article 1 to be added to the next place. So to the .vi. place, saying: 5 tymes 4 is 20, and 1 reserued is 21, set y^e diget 1 vnder the line, reseruing 2 the article to the next place. Then to the .vii. and last place, saying, 5 tymes 6 is 30, and 2 that was reserued is 32, set the dyget vnder the lyne, and reserue 3 the article to be set in next & last place beneath the lyne, as ye maye see in the example, and so is al finished. Then vnder al these particular summes drawe

D.iii.

a lyne

Of Multiplication.

a lyne, and adde all them together, setting euer that whych commeth of the addition vnder the lyne, as is in the example, the whyche shall amount vnto this sum, 3225853506000, and thys is it that commeth of the multiplication of the summe A. by the summe B.

Certayne examples of multiplication, in the which ye may exercise your selfe, to be the more practised in it.

A	3452367
To multiply by. B	8892539
	31071303
	10357101
	17261835
	6904734
	31071303
	27618936
	27618936
Sum.	30700308189819

C Two

Of Multipliation.

¶ Two other examples.

$$\begin{array}{r}
 64970 \\
 \text{To mul.} \quad 13 \\
 \hline
 194910 \\
 64670 \\
 \hline
 \text{Su. } 844610
 \end{array}$$

$$\begin{array}{r}
 7432 \\
 \text{To mul.} \quad 324 \\
 \hline
 29728 \\
 14864 \\
 22296 \\
 \hline
 \text{Sum. } 2407968
 \end{array}$$

As for the multiplication by squares is neyther worth the wrytyng, nor the readyng. And wher as in other copies is set Duplacion, triplacion, and quadruplacion, all that is superfluous, for so much as it is contayned vnder the kynde of multiplication, and they that are expert in this feate, may ryght well perceyue it.

¶ The prooofe of multiplication.

The prooofe of multiplicatiō may be by ii. meanes, by y^e subducting out of all y^e 9, & the second way is by partition. As concerning the first waye, ye shall fyrst

D.iiii.

make

Of Multiplication.

make a crosse, then behold the multiplicable number, and subdue out of it all the nynes, and that that remaineth not able to make 9, set it at the vpper end of y^e crosse. Then come to the multiplicatour, and doo lyke wyse in hym, and that which remaineth (al the nyne subduced) set it at the vnder part of the Crosse. Then multiply the figure standing in the vpper part of the Crosse by the figure standing in the neather part of the Crosse, and out of the same that cometh of it, take 9 as ofte as ye can, and that which remaineth not able to make 9, set it at the ryght syde of the Crosse. Then come to the total summe multiplye, and subduke all the nyne out of hym lyke wyse, and that which remaineth not able to make 9, set it at the least syde of the Crosse, and if it be lyke the figure standyng at the ryghte syde of the Crosse, then it is well, other wyse it is not. As here by an example, ye shall perceyue playnly.

¶ An

Of Multiplication.

An example of the prooffe.

$$\begin{array}{r}
 \text{A} \quad 7963 \\
 \text{B} \quad 1852 \\
 \hline
 15926 \\
 39815 \\
 63704 \\
 7963 \\
 \hline
 \end{array}$$



C 14747476

To know whether the summe C. be the very summe which commeth of the multiplication of A. by B. then first subdick al the 9 that ye fynde in the multipliable A. and the rest set it at the vpper ende of the Crosse, whyche ye shall finde to be 7. Then to the multiplicatione B. do lykewise, and see what remaineth, & there remaineth also 7, set that also on the neather end of the crosse then multiplie thys 7 standyng in the vpper ende, by 7 standyng in the neather end, and therof commeth 49. Whe thou hast taken al the 9 out of thys 49 there

Of Multiplication.

There wyll remaine 4, the whych thou shalt set at the ryght syde of the crosse. Then come to C. the totall sum of the multiplication, and there likewise take oute all the 9 that ye fynde there, and the rest not sufficient to make 9. set it at the least syde of the Crosse, the whych thou shalt finde to be 4: and for because that this 4 to be set at the left syde, is lyke the figure standyng in the ryghte syde (for that is 4 also) therefore thys multiplication is good and well made: and so shall ye finde it lyke wyse in all other examples.

The prooffe by Particion is to Deuide the totall summe C. by the multiplicatour B. and if the quocient be iust A. then is it well multiplied, otherwise it is not. But thys way can ye not practyse, vntyll such tyme as ye haue learned the feate of Particion.

¶ The ende of Multiplication.

¶ The

The fyft part called Particion.

Particion is a part of Algorisme,
by the which ye may easelye de-
uide any greater lūme by a lesse
or equal, shewing how oftē times y^e di-
uisor is cōtained in the nūber diuisible.

In thys feate of Particion be.iiii.
numbers to be noted, the number diui-
sible, the number diuisor, the quotient,
and the remayne, if there be any.

Before you come to Particion it shall
be verpe needeful and necessary for you
right perfectly to know the table of mul-
tiplication of Digets, which is set in the
chapter of multiplication. For vnlesse
that ye know that perfectly, ye shall stick
greatlye, not onely in Multiplication,
but also in thys feate of Particion, and
that exactlye had in memozye, the rest
shall be farre easier, as for example. If
ye wyll knowe howe often tymes 7 is
contayned in 68, imagin by and by that
thys 7 shoulde be contayned 8 tymes,
then

Of Particion.

then if ye know without the booke perfectly the foresayde table, ye shal se that 3 tymes 7 is but 56, ergo 7 is contained moze then 8 tymes in 63. Imagin then and suppose it to be 9 tymes in 63, then by the table see what 9 tymes 7 is, and you shal se that it is 63, wherfore thou mayest conclude that in 63, 7 is contained 9 tymes and 4 ouer.

Num.	$\begin{array}{r} \textcircled{0} \qquad \textcircled{0} \\ 1 \textcircled{0} \textcircled{0} 2 \textcircled{0} \\ 48231 \\ 33333 \end{array}$		Quotient. 15077. 3 Diuisor.
------	--	--	-----------------------------------



To deuide thys number 45231 by 3, the 3 is Diuisor. fyrst ye shal set downe your numbers to be deuided, and at the end of that number on the right hande ye

Of Particion.

ye shall make a stryke wherein ye shall set your quocient, and then set downe your diuisor, whych is 3, vnder þ figure that standeth at the vttermost ende at the left hand that is vnder 4, and then say: how many times 3 may I haue in 4, once 3, and 1 remaineth ouer, sette 1 within the stryke, and that 1 that remaineth set ouer 4, then stryke the diuisor 3 with a dashe of your pen, and set the diuisor 3 vnder the figure 5, then ioyne the article 1 to the dyget 5, and it is 15, then saye how many tymes 3 maye I haue in 15, 5 tymes 3, sette that 5 in the stryke next to the figure 1 and close vp the article 1 and the dyget 5 wyth a cypher ouer either of them, and the strike the diuisor 3 w a dash of your pen, & set the diuisor 3 vnder the thyrdd figure 2, & se how many tymes 3 ye may haue out of 2, none, therfore set downe a ciphers within the stryke next to the figure 5, & strike out your diuisor wyth a dashe of your penne, and set the diuisor 3 vnder the

the

Of Particion.

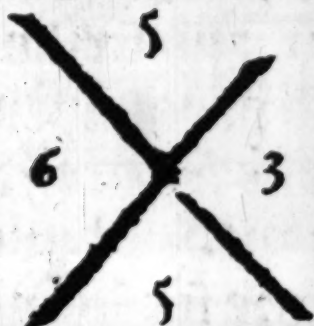
the.iiii.figure 3, then ioyne the article 2
to the Diget 3, and that maketh 23, then
see how many tymes 3 ye may haue in
23, 7 tymes 3, and 2 remaineith, set that
7 within the strike, nexte to the cipher,
and the 2 that remayneth set ouer the
fourth figure 3 and close bp y article 2
wyth a cypher, then stryke out the di-
uisor, and set it vnder the first figure 1
at the ryght hande, then ioyne the ar-
ticle 2 to the Dyget 1, and it maketh 21,
then see how manye tymes 3 ye maye
haue in 21, 7 tymes and nothing remai-
neth, then sette the 7 wythin the strike,
and close the article 2 wyth a cipher 0
ouer eche of them, and strike out the di-
uisor wyth a dash of your pen, & so the
thyrd part of 45231 is 15077,

The second example.

	6	Divisor.
	390.	Quotient.
	5	part
	8	The

Of Partition.

The



prooffe.

To deuide thys number 2345 by 6,
the 6 is the diuisor, begin your diuision
at the leaſt hand, as is ſayd in the fyrſt
example, & ſet your diuisor vnder the
thyrde figure 3, for ye maye not haue 6
out of 2, & therfore ſai how many times
6 may ye haue in 23, 3, and 5 remaineth,
ſet the 3 within the ſtrike, and the diget
5 that remaineth ſet it ouer the ſecond
figure, and cloſe the article 2 wyth a ci-
pher 0 ouer it, and the ſtrike out the di-
uiſor wyth a Daſhe of your pen, and ſet
your diuisor agayne vnder the thyrde
figure 4, and then ioyne the article 5 to
the diget 4, and it is 54, then ſee how
many times 6 ye may haue in 54, 9 and
nothyng remaineth, ſette the 9 wyth
in the ſtryke, and cloſe vppe the article 5
and the dyget 4 wyth a cipher 0 ouer
eyther

ſecond

Introduction

Of Particion.

either of them, and strike out the Diuisor with a dash of your pen, and set the diuisor vnder the sygure 5, and say: how many times 6 may ye haue out of 5, no tyme, therefore set Downe a cipher 0 wpyth the stryke, and let the 5 stand, and strike oute the diuisor wpyth a Dashe of your pen, and so the 6 part of 2 3 4 5, is 390, and the 5 that remayneth sette at the ende of the quocient in this maner, $\frac{5}{6}$ and so the quocient is $390\frac{5}{6}$

TO deuide by 2 or 3 figures, or by as many as pleaseyth you.

fyrst set Downe your number to be deuided, and your diuisor vnder it, beginning at the least syde, at such a place as ye maye take the least figure of your deuisor in the last end, and then se how oft ye may haue that figure in y figure aboue it, and that set a parte for your quocient, with the which quocient ye shal multiply euery figure by it selfe of your

Introduction

Punk.

E.I.

The

Of Particion.

The



prooffe.

First set downe this number 4 1 2 3, & deuide it by your diuisor 12, begyn your woork at your least hand, setting the article 1 of your diuisor vnder 4 and the Diget 2 vnder the ~~thirde~~ figure 1, & then see how many times y article 1 of your diuisor ye may haue in the 4 ouer it, ye would say 4 tymes 1, but that can not be, because there ye may not haue the quotient 4 multiplied with the Diget 2 of your diuisor, for therof comineth 8, & then that 8 ye may not take out of 1 ouer the Diget 2. Therefore say againe: how many times 1 may ye haue in 4, 3 tymes and 1 remaineth, set the 3 within the strike of the quotient, & the 1 that remaineth set ouer 4, and strike out the article 1 of your diuisor with your pen.

Then

Of Particion.

Then multiply the quocient, with the Diget 2 of your Diuifoz, and thereof cometh 6. Then ioyne the article 1 that remayneth, and the Diget 1, and it is 11, thereout take 6, and there remaineth 5, set the 5 ouer the ~~thirde~~ figure 1, & close vp the article 1 ouer 4 with a figure ouer it, and strike out the Diget 2 of your Denifoz, againe but one figure forward as thus: set the article 1 vnder the ~~thirde~~ figure 1 in the No. and the Diget 2 vnder the ~~second~~ figure 2, and ther se how many times 1 ye may haue in 5 that remayneth. 4 tymes and yet there remaineth 1 which must be set ouer 5, & stryke out the article 1 wyth your pen. Then multiplie the Dyget 2 of your Denifoz with the quocient 4, and it is 8, then ioyne the article 1 that remayneth, and the Dyget 2 in No. together, and it is 12, then take 8 out of 12 and there remayneth 4, set that 4 ouer the ~~second~~ figure 2 in the No. and close vp y article 1 with a cipher 0 ouer it. & strike out the

C.N. Diget

Of Particion.

Dyget ² of your diuisor with your pen.
 Then renewe your diuisor agayne, as
 before is sayde, and set the article ¹ vn-
 der the ~~second~~¹² figure No. and then see
 how many tymes ¹ ye haue in ⁴, that
 remaineth ³ tymes and ¹ remayneth,
 set that ³ within the strike for the quo-
 cient, and the one that remayneth sette
 ouer the ⁴. and stryke out the article ¹
 of your diuisor with your penne. Then
 multiply the quocient ³ with the Diget
² of your diuysor, and then it is ⁶, then
 ioyne the article ¹ that remayneth, and
 the Dygette ³ in No. and it is ¹². Then
 take ⁶ out of ¹² and there remayneth ⁷,
 set that ⁷ ouer the Dyget ³ in No. and
 close vp the article ¹ wth a cipher ⁰ o-
 uer it, and strike out the Diget ² of your
 diuisor, and then the ¹² part of ~~44~~²³ is
 for the quocient ³⁴³, and the ⁷ that re-
 maineth shall be set at the ende of your
 quocient, as thus $\frac{7}{12}$

¶ An example.

Re. r.

Of Particion.

Re. 1.	2	8	8	1
Dy. 6.	7	8	8	3
	1	3	1	4
	8	8	8	8
	1	8	3	4

¶ An other example.

Re. 121.	1		
Dy. 200.	4	8	21
	2	1	
	2	1	

Ye shall note that in these two exam-
 ples the quocient standeth in the myd-
 dest betwixte the two lynes, and the
 number to be deuided standeth next a-
 boue the vppermost lyne, and the diui-
 sor standeth nexte vnder that neather
 lyne. But then ye must marke that ther
 be two diuisors, one is called the diui-
 sor current, because it is alwayes re-
 mouable toward the right hand in the
 operation, and also it is stricken out, &
 this diuisor standeth alway vnder the
 neather lyne of the quocient. The other
 diuisor is called the diuisor permanēt,

E.iii.

for

Of Particion.

for he is not remoued nor blotted as ϕ other is, but standeth alwaye permanent on the leaft hand, Directly agaynst the number that is to be deuided. And iust ouer hym ther standeth the remain of the whole number, whych remayne cannot be deuided by the deuisor, and therefore it is set ouer the diuisor permanent with a strike betwixt, as ye may see in the fyrst ensample, where 1 is remaying, and 6 is deuisor.

		3	2					
A		3	8	ϕ	8	ϕ	8	2
C		8	7	7	0	2	3	0
B		4	4	4	4	4	4	

For as muche as in this example ye cannot take 4 which is the diuisor, out of 3, therefore ye shall sette 4 vnder 5, and saye howe many tymes 4 haue ye in 35, ye haue 8 tymes 4, and there resteth 3, ye shall sette the 8 betwixte the twoo lynes, & the 3 aboue 5, then efface the

Of Particion.

the 5 & the 4, then ye shall set 4 vnder 0
and saye: in 30 howe manye tymes 4,
7 tymes, sette 7 betwene the lynes at
the ryght syde by the 8, and there re-
steth 2, whych ye shal set aboue 0, and
efface 0, then set 4 vnder 8 and say: in
28 howe many tymes 4, 7. and there re-
steth nothyng, set 7 betwene the lynes
by the 7, then set 4 vnder 0, and saye
howe many tymes 4 in 0, there is none,
therfore set 0 betwene the lynes, then
shall ye say in 9 howe manye tymes 4,
2 tymes, set than 2 betwene the lynes,
and resteth 1; which ye shal set aboue 9
and efface 9, than say in 12 howe many
tymes 4, 3 tymes, set than 3 betwene
the lynes by 2, and ther resteth nothing
Than in 3 which is the last figure, howe
many tymes 4, no tymes, therefore at
the ende of the figure ye shall set the 3
thus 3 and al is done.

4

An example,

C.iii.

A

Of Partition.

	3	2		1			
A	3	5	0	8	0	9	2 3
C	8	7	7	0	2	3	40
B	4	0	0	0	0	0	0
	4	4	4	4	4		

Example, when the Diuisor is an ar-
ticle, it behoueth to do semblably, in say-
yng: in 3 how many tymes 4, no times
and therfore we shal set 4 vnder 5, and
0 vnder 0, and say: how many tymes 4
in 35, 8 tymes, set 8 betwene the twoo
lynnes vnder 5, and ther resteth 3, which
ye shal set ouer 5. Then set the 3 that
standeth ouer 5, and the 0 together, and
that is 30, than say how many tymes 4
in 30, 7 and alwayes so to the end. And
then ye shal set 4 vnder 2, and 0 vnder
3, and say: in 12 in taking the 1 that shal
rest of the summe before, and shal be a-
boue 9, and the 2 that is after 9, howe
many tymes 4, 3 tymes 4, and then set
3 in the number of C, agaynst 2, & then
shal ye cease, for there remayneth all
onely

Of Particion.

onely 3 to be parted by 40, now ye shall
not make 0 vnder 3 as is afoze, but at
the ende ye shall set 3 thus $\frac{3}{40}$

$$\begin{array}{r}
 \text{A} \quad 3 \quad 5 \quad 0 \quad 8 \quad 0 \quad 0 \quad 2 \quad 3 \\
 \hline
 \text{C} \quad 8 \quad 3 \quad 5 \quad 2 \quad 6 \quad 0 \quad 4 \quad 2 \\
 \hline
 \text{B} \quad 4 \quad 2 \quad 2 \quad 2 \quad 2 \quad 2 \quad 2 \quad 2 \\
 \quad \quad 4 \quad 4 \quad 4 \quad 4 \quad 4 \quad 4 \quad 4 \quad 4
 \end{array}$$

Example, when the Diuisor is com-
pout, as in this figure afoze, ye shall say:
in 35 that be neare A how many times
4 that are in the number of B. 8 times 4
set that 8 betwene the two lines in the
place of C. and ther resteth 3, which ye
shall set aboue 5 and efface 35 of A, and
4 of B, then shall ye say in multiplying
the 8 of C. by the seconde figure of B.
that is 2, ye shall say 2 tymes 8 bene 16.
the abate 16 of y number of A against
the same 42, and there be 3 whrch is 0
uer 5 & 0 of the nuber, that be worth 30.
and

Of Partitiou.

and ye shall say : of 30 abate 16 and ther
resteth 14 ; of the whych 14 ye shall set
ouer 3 and efface 3 , and 4 aboue 0 and
efface 0 , the shall ye set the diuisor some
what forwarde , the 4 agaynst 0 that
shall be effaced , and 2 agaynst 0 , and say
in 14 Demonstring 1 that shall be aboue
 3 , and 4 aboue 0 howe many tymes 4 ,
 3 tymes , set the 3 beneath the lynes in
the number of C . and there resteth 2 ,
whiche ye shall set ouer 4 , and efface
 4 . Then shall ye say agayne in multi
plying the 3 of C . be the seconde figure
of B . whych is 2 , ye shall saye than : 2
tymes 3 is 6 and of that 8 is agaynst it ,
ye shall abate 6 and there shall rest 2 ,
whych ye shall set ouer 8 and efface 8 ,
& alwayes so vnto the ende . And when
ye come to the twoo last figures of A .
and that yee woulde deuide them by
 42 : ye may not , for the first that is but
 2 shall be effaced with 1 that standeth a
boue 5 , and because that ye maye take
there nothyng , ye shall set 0 agaynst 2
of A .

Introduction

REF ID: A66866

peas

22

The

Of Particion.

The



prooffe.

In this example in the number of B that is the diuisor, be manye figures, & therfore ye shall say: in 3 of A. how many tymes 2 of B, 1 tyne, set that 1 vpon C. and 1 that remaineth of 3, ouer 3, and then shall ye come to the 4 of B. and to 1 of C. and multiplve them in saying: 1 tymes 4 is 4, whych 4 ye shall abate of the number of A. in takyng 1 aboue 3 and 5 after 3, that shall be worth 15, and therof ye shall abate 4, and ther resteth 11, and for y more shortest way, of 5 one ly abate 4, and set the 1 that remaineth aboue 5, and there resteth alwayes 11, then shall ye come to the 3 of B. and to 1 of C. and make al onely the multiplicacion in saying: 1 tymes 3 bene 3, then of 10 abate 3, in Demonstring 1 ouer 3 and 0 after

Of Particion.

after, and then ther resteth 7, which ye
shal set ouer 0, the because of the cipher
0 may nothing come, ye shal leaue it, &
go to the next figure and say: 1 times 5
that is at the last ende of B. bene 5, but
in so much that we may nothing abate
of 0 that is agaynst it in the number A.
ye shal borrowe of the figure afoze, that
is 8 onely one and efface the 8, and set
the 7 aboue the 8, and the 1 that ye shal
hold shal be woorth 10 to the regard of
the number that ye be in, then ye shal
say: of 10 abate 5, there resteth 5, which
ye shal set aboue 0, then shal ye auance
our partour consequently vnder the o-
ther figures folowynge, & is to say, till
the last of B. be set vnder the last of A.
and then ye may not auance them any
further, because ye be come to the endes
of both the numbers.

The proofof Diuision or Particion
is made in thys maner: Ye shal fyrste
make a Crosse, as ye did before in mul-
tiplication, and abate the 9 of the Par-
ticion

Of Particion.

tion, and set the rest at the leaft end
of the Crosse semblablye of the thyrde
number that is betwixt the two lynes
and set the rest at the right ende of the
same Crosse, and if there bee nothyng
rest, set a 0. Then multiplie the two
numbers of figures, for thei be Digets
that one by that other, and therof abate
all the 9, if there be nothing in the first
nũber, or if ye may not diuide it, ioyne
it with the same that shall come ther
of. And so the rest that may not make 9,
set it at the end vnder the Crosse. Then
shall ye come to the first number, and
semblablye doe away the 9 thereof, and
set the rest aboue the Crosse, and if that
aboue and that beneath be like, the par
ticion is good, or if it be not, it is false.
And for to vnderstand it better, we will
make proofes by the ensamples before
sayde.

For the firste ye shall take the part
four which is 4, and set it at the leaft
syde of the crosse, then shall ye abate
the

Of Particion.

the 9 of the thyrde number, and there resteth 8, which 8 ye shall set at the right ende of the Crosse, and multiply it by 4 and thereof cometh 32, whereof resteth 5, then adioyne them wyth the 2 farthinges that ye might not deuide, and they shall make 7, the which 7 ye shall set vnder the crosse, than shall ye abate the 0 of the first number that bene the farthynges, and there shall rest 7, whych 7 ye shall set at the vpper ende of the Crosse, and so the twoo endes be both a lyke, whych sheweth the pzoofe to be well and truly made.



¶ The ende of Particion.

¶ The

The fyre part called Reduction.

Reduction is a kind of Algorisme by the which ye be taught to reduce numbers of lesse Denomination or value, to nūbers of moze Denomination or value, or if the case requyre it numbers of great Denomination to the numbers of lesse value. Example of the fyrst. 20. li. 63. s. 44. d. 10. far. Thus reduce farthylugs to pence, & the pence to shyllinges, & the shyllinges, to poudes and then thys summe is. 23. li. 6. s. 10. d. and. 2. far. so haue you reduced the lesse summe to the moze. Example to reduce the moze to the lesse. Take the same example agayne, & reduce the. 20. li. 63. s. 44. d. 10. far. al into farthinges, and it wyll make 22410 farthynges, and it reductyng the poundes to shyllinges, then to pence, and all that pence to farthinges, wherfore it shall be very necessary for you to know what thying your number doth signify, whether waight money,

Of Reduction.

money, measure, or tyme, and to be expert in all maner of accomptes: it shal be necessary for you to know al maner of wayghtes, coynes, measures, and tyme. Example in Englysh money, 4 farthynges make 1. d . 12. d . maketh a shilling, 20. shillings maketh a pound.

In weyght, & fyrst of Troy weight, every pound hath 12. ounces, and every ounce 20. peny weyght, and every peny weyght 20. graynes. &c.

The haberdepeys pounce hath 19. ounces, an ounce .8. drammes, the draine .3. Scruples, the scruple 20. graynes.

Of measure, the yerde hath 3. foote, the foote hath 12. ynches, the ynches 3 barley cornes of length.

Of tyme, the yere hath 365. daies, the day 24. houres, the houre hath 60. minutes, every minute 60. secondes, every second 60. thyrdes, every thyrde 60. quartes, every quart 60. fiftes, every fift 60. syxtes, & so forth infinitelye

I.i.

¶ To

Of Reduction.

To reduce the more summe
to the lesse.

When thou wylt reduce the more to the lesse, looke howe many tymes the lesse is contayned in the more, and by that number multiplie the number of the more, and that that cometh of the multiplication, sheweth the more reduced to the lesse. Example. I woulde reduce .s. pence to farthynges, looke how many tymes a farthing is contained in a peny, and that is as ye knowe 4 tymes, then multiplie according to the rule 8 by 4. and that maketh 32, whiche be 32 farthynges, & so 8 .s. maketh 32. farthinges.

An example.

Here is a summe of .28.li. and .6.s. I would haue these poundes which is of more denomination reduced to the shyllinges, which be of lesse Denomination: then looke fyrst howe ofte a shylling is contayned in a pound, and that is .20. tymes, for .20.s. maketh a li. multiplie

Of Reduction,

tiplly then the 20, li. by 20, thereof cometh 560, whyche be all Shyllinges, to this put the other 6 Shyllinges, and so all is 566 Shyllinges.

But ye shal note, that wher there be any summe of meane Denominacions betwene the more to be reduced, and the lesse, to whoin reduction is made: then shal it be easer to reduce first the more to the meane, and so by the mean to the lesse.

The example .43. li. 19. s. 20. d. 4. farthings, if ye wil reduce all these sums to the farthings: then shal it be better for you to reduce the poundes fyrste to Shyllinges, and then being Shyllinges to reduce them to pence, and at the last to farthings: so by your rule 43, pound maketh 860 Shyllinges, to that adde the 19 Shyllinges, it maketh 879, then reduce thys 879. Shyllinges to pence: looke fyrst howe many pence are contayned in a Shilling, and that is to multiply 879, by 12, & therof cometh 10548
f.ii. which

Of Reduction.

which be all pence, to thys adde your
20. pence, & that maketh. 10568. the
reduce these pence to farthynges, see
how many farthynges be in a penye,
¶ is 4. multiply. 10568. by, 4. commeth
to. 42272. to these ad the 4. farthynges
and that maketh. 42276. farthynges.
Thus haue ye reduced .43. li. 19. s. 20. d
4. farthynges, the moze by the meane
to the lesse.

To reduce the lesse to the moze.

Fyrst marke how manye tymes the
moze doth contayne the lesse, and by
that number deuide the lesse, and the
quocient sheweth the lesse reduced to
the moze. Example. I woulde haue
thiz summe. 5600. s. reduced into pou-
des: for howe manye tymes a pounde
doth contayne a shylling, that is. 20.
tymes, then deuide. 5600. by 20. the quo-
cient shall be. 280. which be poundes, so
that. 5600. s. reduced to poundes, ma-
keth. 280. li. and so likewyse in all other
reckonynge

When

Of Reduction.

When summes of diuers Denominations come in addition to be added together, then beginning at the summes of least Denomination, adde them euer together, tyll such tyme as they make a number of the next Denominacion, and that that remaineth not able to make any number of greater Denominacion, set it vnder the line, and procede to the next summe of greater Denominacion to the whyche adde the number of the same Denominatiō reduced out of the summe befoze the lesse Denominacion, so proceeding to the ende.

An example.

li.	s.	d.	far.
680.	10.	5.	3.
3200.	29.	7.	2.
3008.	3	10.	3.

Begyn at the least whych be farthinges, saying: 3 and 2 bene 5, and 3 bene 8 these 8 farthinges make 2 pence, therfore

℥.iii. foze

Of Reduction.

foze take these pence, and adde them to the next summe, whych is of the same Denominacion, saying: 2 and 10 be 12. d. whych is 1 shylling, the 7 and 5 be 12, whyche also maketh a shyllinge, so among these pence ye haue 2 shyllinges to be added to the next order of shyllinges, saying: 2 and 3 be 5, and 9. is 14, put the dyget 4 vnder the lyne, and reserue the article 1 to the nexte place, saying: 1 and 2 is 3, and 1 maketh 4, set that 4 vnder the lyne also, and then is it 44. s. the which reduced to poundes maketh 2. li. and 4. s. remayneth vnder the tytle of shyllinges: then put to that 2. li. to the other poundes, and so haste thou done in reduction of the summes of lesse value to the greatest summe whych be poundes. And this is sufficiently entreated of Reduction.

¶ The ende of Reduction.

¶ The

The seventh part called Progression.

Progression sheweth the number
when it beginneth at 1 or at 2, in
mounting alwayes by one, & one
as dothe this number 1 2 3 4 5 6 7 8 9.
Now if ye will knowe the valour of the
numbers, firste ye must regarde twoo
thinges, that is to wote, if the number
procede continually without leauing a
ny thing betwixt as here 1 2 3 4 5 6 7, or if
it leue any thing betwixt as here 1 3 5 7 9.
Secondly ye must consider if the num-
ber be euen or odde. And after these
two considerations, then by four rules
that here foloweth ye may knowe the
valour of eche whole number.

The first rule is whan one number
procedeth in mounting alwaies conti-
nually in the begynning, then if it end
in an euen number, then shall ye take
the halfe of that euen number, and by
it ye shall multiplie the odde number
that cometh of the euen number, as ye
may see in this example folowynge.

I.iiii.

Ex

Of Progression.

¶An example.

1	2	3	4	5	6	7	8.		
							4		
							9		
							36		

If ye wyll know howe muche thys number is worth, then

multiply the halfe of 8 that is 4, & the number that is after 8 is 9, and then thereof commeth 36, and so muche is the summe worth, and thus inaye ye do with al such lyke questions.

¶An other example.

1	2	3	4	5	6	7		
						4		
						7		
						28		

The 7

4 p^{ro}se.

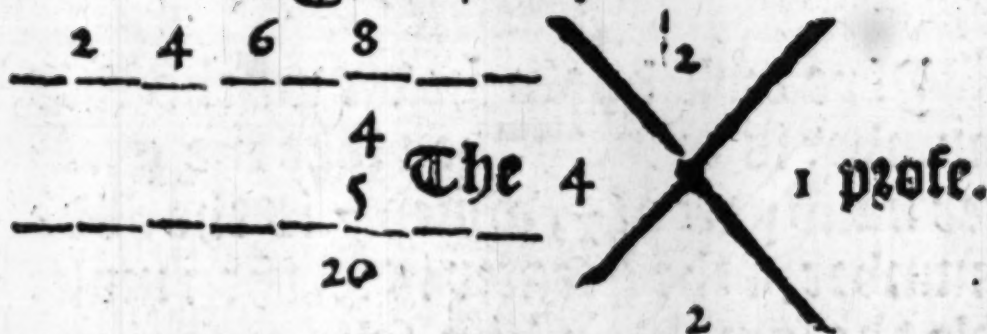
For to multiple this number 7, wher in the greatest and the moze halfe is 4 ye must multiplie 7 by 4, and it is 28, and so much is the whole summe.

The thirde is, if a number p^{ro}ceede not

Of Progression.

not continuallye, and ende in an even number, ye shall take the halfe of the sayde number that is even, and by hym multiplie the same that is nexte comyng after the same halfe, and in this doyng ye shall haue the summe of the same number.

¶ An example.



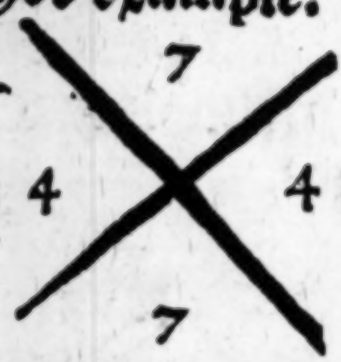
¶ If ye wyl know howe muche thys number is worth, then take the halfe of 8, that is 4, then multiply by the 4 the number whych foloweth, that is 5 in saying: 4 times 5 is 20, and so much is worth the whole summe.

The fourth is whan the saide number p.ceedeth not continually, then if it end in an odde number, ye shall take the

Of Progression.
the halfe of the sayde number that is
odde, and multiply it by it selfe.

An other example.

1 8 5 7	7	
4	The 4	4 prooffe.
5		
16	7	



¶ If ye wyll know howe muche this
number is woorth, then take the grea-
ter halfe part of 7, which 7 is the odde
number, & the greater is 4, then multi-
ply the same 4. by him selfe in saying:
4 times 4 is 16, and so much is woorth
the sayd number. And thus may ye do
with any other such lyke questions.

¶ Yet is there an other progression,
and it is also a maner of Duplication,
as here after shall appeare.

1 2 4 8 16 32

¶ Now if ye desyre to make a summe
of these, do nothing els but double the
last

Of Progression.

last figures, as 32 and 32 is 64, & there
of subtragh 1, and there resteth 63, and
that is the summe, and it is done.

¶ The end of Progression.

¶ The rules of Fractions.

In Fractions there be two man-
ner of nūbers, whereof the first
is called the Numerator, for hee
sheweth the number of the Denomina-
tor, that standeth vnder hym. The o-
ther is called the Denominator, for he
sheweth euer howe muche the part is,
and standeth euer vnder the Numerator,
and ye may make betwene them
both a lyne if it please you, as appea-
reth in these examples folowynge.

Seven by 9 parted, ye shall set thus $\frac{7}{9}$

And 1 by 2 parted thus $\frac{1}{2}$

And 1 by 4 parted thus $\frac{1}{4}$

¶ Of

Of Fractions.

Of Numeration.

Numeracion is the first eschepe,
and it is nothyng els but that
ye must euer set the lesse summe
aboue, and the more summe vnder
neath, as by these examples folowynge
is shewed.

$$\begin{array}{cccccccccccc} \frac{1}{2} & \frac{1}{5} & \frac{1}{9} & \frac{2}{3} & \frac{6}{7} & \frac{8}{10} & \frac{3}{4} & \frac{4}{6} & \frac{5}{9} & \frac{6}{8} & \frac{8}{14} \end{array}$$

Of Addition.

If ye wyll adde two or thre, or
foure broken numbers together
ye must marke whether the num-
bers be of one denomination as these
 $\frac{1}{3}$ and $\frac{1}{3}$ if they be al of one name, then

adde them together, in saying: 1 and 2
is 3, set the 3 aboue 3, & that is 1 whole.

Now adde $\frac{2}{5}$ $\frac{4}{5}$ and $\frac{3}{5}$ together, and set
them thus 2 they make 1 and $\frac{4}{5}$

Now wyll ye adde broken vneuen
num

Of Fractions.

numbers as $\frac{2}{3}$ to $\frac{3}{4}$ then multiply them
 crosse wyse and say: 3 tymes 3 is 9, and
 2 tymes 4 is 8, adde that 8 to 9, and it
 is 17, then multiply the numbers toge-
 ther in saying: 3 tymes 4 is 12, set that
 12 vnder 17, as thus $\frac{17}{12}$ that is 1 and $\frac{5}{12}$.

When there cometh moze broken nū-
 bers then two at once, as in this exā-
 ple, if you would adde $\frac{5}{4}$ $\frac{5}{6}$ to $\frac{4}{5}$ then

make the 2 first numbers after the rule
 afoze said, & it cometh to $\frac{14}{24}$. Nowe ad

$\frac{38}{24}$ to $\frac{4}{5}$ and multiply them crosse wyse,
 in saying 5 tymes 38 is 190, the 4 tymes
 24 is 96, thereto adde 190 comineth to
 186. set them aboue the line, then mul-
 tiply 5 with 24 comineth 120, set them
 vnder the lyne, & they stande thus $\frac{286}{120}$

that is 2 and $\frac{4}{30}$. Nowe adde me 1 and $\frac{3}{5}$
 to $\frac{4}{7}$, then say: 2 tymes 3 is 6, & 5 tymes
 1 is 5

Of Fractions.

1 is $\frac{1}{5}$ adde them together, for the tellers, and set it aboue the lyne, the multiply the two numbers together in saying: 2 times 5 is 10, set that 10 vnder 11 as thus $\frac{11}{10}$. Now addde $\frac{4}{10}$ to $\frac{11}{10}$ multiply them crosse wyse, lyke as ye dyd in the example before, and ye shall haue $\frac{117}{70}$ which is 1 and $\frac{47}{70}$ and thus ye shall do wyth all other.

Of Subtraction.

When you subtragh a broken fro broken, then ye muste marke whether the numbers of the same broken be lyke in Denomination or not, & if they be lyke of name, then euer subtragh the lesse teller out of the more, & set the number vnder the teller. As for example, yf ye wyl subtragh $\frac{5}{7}$ from $\frac{12}{7}$ then subtragh the vppermost 5 out of 12 and there resteth 7. set that 7 aboue

Of Fractions.

aboue $\frac{12}{12}$ as thus, $\frac{2}{12}$ that is $\frac{1}{6}$ but when

there cometh broken & vneuen nūbers
as these $\frac{9}{13}$ from $\frac{5}{9}$ then multiply both

the nūbers together in saying 6 times
 13 is 78 . Then multiply crossewysle the
numbers with the tellers in saying: 13
tymes 5 is 65 from 9 times 9 is 81 , now
subTRACT 81 from 65 and there resteth
 16 , that 16 set aboue 78 as thus $\frac{16}{78}$. Now

wyl ye subtragh $\frac{13}{34}$ from $\frac{24}{65}$ breake ech
together and commeth to $\frac{13}{12}$ and $\frac{22}{15}$ the

multiply the nūber in saying 15 tymes
 12 is 180 , then multiplie them crosse
wise in saying 12 tymes 22 cometh 264
thē say 15 tymes 13 cometh 195 , now sub
tragh this 195 from 264 , & there resteth
 69 , which 69 set aboue 180 , as thus $\frac{69}{180}$
and it is done.

$$\frac{2}{6} \text{ frō } \frac{1}{6} \text{ is } \frac{6}{39}$$

$$\frac{1}{3} \text{ from } \frac{1}{4} \text{ is } \frac{1}{12}$$

Of

Of Multiplication.

If ye wyl multiply $\frac{6}{7}$ wyth $\frac{13}{16}$ then multiply the vppermost figures together in saying: 6 times 13 is 78, the multiply the neather most together, in saying: 7 tymes 16 is 112. the whych ye shal set thus $\frac{78}{112}$ that is $\frac{39}{56}$. Now wil ye multiply broken wyth the whole: as $\frac{2}{5}$ wyth $\frac{6}{1}$ then say: 2 tymes 6 is 12. and 5 times 1 is 5, set them thus $\frac{12}{5}$. And whē that the vppermoste number is moze thē the neathermost, thē ye shal deuide it with the neathermost, & that þ cometh therof is the whole, as thus: Deuide 2 wyth 5 cometh 2 hole & $\frac{2}{5}$. Now wil ye multiply the whole and 5 broke w the broken as 7 $\frac{5}{4}$ w $\frac{5}{8}$ thē multiply them with) $\frac{35}{32}$ 7 cometh 28, & ad 3 therto cometh $\frac{13}{4}$. Now make it after the first rule in saying: 5 tymes 31 is 155, & 4 times 8 is 32: set them thus $\frac{155}{32}$ that maketh $4\frac{27}{32}$ and it is done.

1 and

Of Fractions.

$\frac{1}{3}$ and $\frac{1}{4}$ is $\frac{1}{12}$ $\frac{2}{3}$ and $\frac{6}{8}$ is $\frac{12}{24}$

Of Diuision.

The number that ye wyl deuide set
euer at the least hand, & that ye wyl
deuide wth all, set at the right hand.
As when ye wil deuide $\frac{4}{5}$ wth $\frac{2}{3}$. And

ye shal multiply the broken crossewise
in saying: 3 times 4 is 12, & is the hole
that ye wil deuide, then multiply 5 wth 2
commineth 10, that is $\frac{12}{10}$ maketh $1\frac{2}{10}$ And

when that ye wil deuide broken wth
whole, as $\frac{5}{7}$ wth 4, then set your frac

tion and whole thus $\frac{3}{7}\frac{4}{1}$ nowe multi-
ply 1 wth 3, that is the whole whiche
must be deuided, then multiply 4 wth
7, and it maketh 28, which must be set
thus $\frac{3}{18}$ and it is done. But if ye may de

uide the teller iust wth the whole, that
were lyghter, as $\frac{18}{19}$ in 6 whole, therfore

Of Fractions.

Deuide 18 is 6 maketh 3, the whyche ye
shal set thus $\frac{3}{18}$. Nowe wyll ye knowe

what broken of broken is, as $\frac{2}{3}$ of $\frac{3}{4}$

Fyrst ye shal multiply the vppermost
fygures one wyth an other sayinge: 2
tymes 3 is 6, and then the vppermoste
in saying: 3 tymes 4 is 12, that maketh
6 that is $\frac{1}{2}$. Item $\frac{6}{12}$ of $\frac{2}{7}$ multiplie

$\frac{12}{12}$ with 3 and adde there 2, commeth
386 whych set thus $\frac{386}{3}$, then multiplie

them wyth 6 commeth to 2326, then
multiplie the vndermoste altogether

saying: 3 tymes 7 is 21, and 2 tymes
21 is 42, therewyth deuide

2316, and it is Done.

[The ende of the rule
of Fractions.

A Table very necessary for **Multiplication.**

1 tynes	1 maketh	1/3	9	27
2	2	4/3	10	30
3	3	9/4 times	5 makes	20
4	4	16/4	6	24
5	5	25/4	7	28
6	6	36/4	8	32
7	7	49/4	9	36
8	8	64/4	10	40
9	9	81/5 times	6 maketh	30
10	10	100/5	7	35
2 tynes	3 makes	6/5	8	40
2	4	8/5	9	45
2	5	10/5	10	50
2	6	12/6 times	7 make	42
2	7	14/6	8	48
2	8	16/6	9	54
2	9	18/8	10	60
2	10	20/7 times	8 makes	56
3 times	4 makes	12/7	9	63
3	5	15/7	10	70
3	6	18/8 times	9 makes	72
3	7	21/8	10	80
3	8	24/9 times	10 make	90
G.ii.				1 times

The Table

a times ii makes ii		6	13	78
2	ii	22	7	91
3	ii	33	8	104
4		44	9	117
5		55	10	130
6		66	1 times 14 make 14	
7	ii	77	2	28
8		88	3	42
9		99	4	56
10		110	5	75
1 times 12 makes 12		6	14	84
2	12	24	7	90
3		36	8	112
4		48	9	126
5		60	10	140
6		72	1 times 15 makes 15	
7	12	84	2	30
8		96	3	45
9		107	4	60
10		120	5	75
1 times 13 makes 13		6	15	90
2		26	7	105
3		39	8	120
4		52	9	135
5		65	10	250

for Multiplication.

1 times 16 makes	16	5	18	90
2		32	6	108
3		48	7	126
4		64	8	144
5		80	9	162
6	16	96	10	180
7		112	1 times 19 makes	19
8		128	2	38
9		144	3	57
10		160	4	76
1 times 17 make	17	5		95
2		34	6	114
3		51	7	133
4		68	8	152
5		85	9	171
6	17	102	10	190
7		119	1 times 21 makes	21
8		136	2	42
9		153	3	63
10		170	4	84
1 times 18 makes	18	5		105
2		36	6	126
3		54	7	147
4		72	8	168

¶.iii.

The Table

9		189	4		96
10		210	5		120
1 times	22	make	22	6	24 144
2		44	7		168
3		68	8		192
4		88	9		216
5		110	10		240
6	22	132	1 times	25	makes 25 50
7		154	2		75
8		176	3		100
9		198	4		125
10		230	5		150
1 times	23	makes	23	6	25 175
2		46	7		200
3		69	8		225
4		92	9		250
5		115	10		275
6	23	138	1 times	26	make 26 300
7		161	2		325
8		194	3		350
9		207	4		375
10		230	5		400
1 times	24	make	24	6	26 425
2		48	7		450
3		72	8		475

for Multiplication.

9		234	3		87
10		260	4		116
1 times 27 make	27	5		29	145
2		54	6		174
3		81	7		203
4		108	8		222
5		135	9		261
6	27	162	10		290
7		189	1 times 31 makes	31	
8		216	2		62
9		245	3		93
10		270	4		124
1 times 28 make	28	5			155
2		56	6	31	186
3		84	7		217
4		112	8		248
5		140	9		279
6	28	168	10		310
7		196	1 times 32 make	32	
8		224	2		64
9		252	3		96
10		280	4		128
1 times 29 make	29	5			160
2		58	6		192

The Table

7	32	224	2	35	70
8		256	3		105
9		288	4		140
10		320	5		175
1 times 33 makes		33	6		210
2		66	7	35	245
3		99	8		280
4		132	9		315
5		165	10		350
6	33	198	1 times 36 make		36
7		231	2		72
8		264	3		108
9		297	4		144
10		330	5		180
1 times 34 mak.		34	6	36	216
2		68	7		252
3		102	8		288
4		136	9		324
5		170	10		360
6	34	204	1 times 37 make		37
7		238	2		74
8		272	3		111
9		306	4		148
10		340	5		185
1 times 35 makes		35	6		222

for Multiplication.

7	37	259
8		296
9		333
10		370
1 times 38 makes		38
2		76
3		114
4		152
5	38	190
6		228
7		266
8	38	304
9		342
10		380
1 times 39 makes		39
2		78
3		117
4		156
5	39	195
6		234
7		273
8	39	312
9		351
10		390
11 times 11 make		121
12	12	144
13	13	169
14	14	196

15	15	225
16	16	256
17	17	289
18	18	324
19	19	361
21 times 21 mak.		441
22	22	484
23	23	529
24	24	576
25	25	625
26	26	676
27	27	729
28	28	784
29	29	841
31 times 31 mak.		961
32	32	1024
33	33	1089
34	34	1156
35	35	1225
36	36	1296
37	37	1369
38	38	1444
39	39	1521
41 time 41 mak.		1681
42	42	1764
43	43	1849
44	44	1936
45	45	2025

C.D.

The Table

46	46	2119	74	74	5476
47	47	2209	75	75	5625
48	48	2304	76	76	5776
49	49	2401	77	77	5929
51 times	51 mak	2601	78	78	6084
52	52	2704	79	79	6241
53	53	2809	81 time	81 make	6561
54	54	2916	82	82	6724
55	55	3035	83	83	6889
56	56	3136	84	84	7056
57	57	3249	85	85	7225
58	58	3364	86	86	7396
59	59	3481	87	87	7569
61 times	61 ma.	3721	88	88	7744
62	62	3844	89	89	7921
63	63	3969	91 times	91 mak	8282
64	64	4096	92	92	8464
65	65	4225	93	93	8649
66	66	4256	94	94	8836
67	67	4489	95	95	9025
68	68	4624	96	96	9216
69	69	4761	97	97	9409
71 times	71 ma.	5041	98	98	9604
72	72	5148	99	99	9803
73	73	5329			

The ende of the Table for
Multiplication.

There foloweth the Rules

and fyrst the rule of thzee.

Multiply by the contrary & Deuide
by the seinblaunt oz lyke. Thys
rule may be vnderstand in two
maners. Fyrst multiplie the same that
ye woll bye by his contrarpe, that is to
wit by the price, and deuide by the sein
blant, that is to wyt, by as much as ye
haue boughte, oz thus: Multiplie the
price by his contrarpe, that is to wyt,
by the same that thou wilt bye, and de
uide it by hys seinblaunt, that is that
same that ye haue bought. And note ye
why it is called the rule of thzee, for
with thzee numbers certayne ye maye
knowe and fynde the fourthe number
vncertayne. And it is a rule ryghte no
table and necessary in the sayct of mar
chaundise. For to haue knowledg of
this rule, it behaueth to set some rules
Differet in maner of questions, & first
in measures long.

The rule of whole numbers.

If 9 elles of clothe cost 25 crownes,
how

The Rules.

how much shal cost 15 by the pryce. Answer. It behoueth you to set the sum, that is to wyt .25. crownes. And than ye shal multiply by his contrarpe, that is to wit, by 15, that is 375. & the deuide them by that semblant, that is to wyt by 9, & thereof commeth 41 crownes & an halfe, and ther remaineth 1 crowne and an halfe, the whych ye shal make in 3. and ther be 54. s. the whych ye shal deuide by 9, and thereof commeth 6. s. Therefore ye may answer that the 15. elles shal cost 41 crownes and an halfe and 6 s. Now if ye wil make the pzoof, it behoueth you to forme your questiō thus: If 15. elles cost 41 crownes and an halfe and 6 shillinges, howe muche shal cost 9 elles by the pryce. Then it behoueth you fyrst to multiply the 6. s. by 9. and that is .54. then it behoueth you to make thereof crownes, that is one crowne and an halfe, and then ye shal multiply the 41. crownes and an halfe by 9, and they ben 373 crownes and an halfe,

The Rules,

halfe, and then set therto 1 crowne and an halfe, & they be 375. crownes, which ye shall deuide by .15. that bene .25. the which .25. is the price of 9 elles, and so the rule is good. And thus you maye do with all other lyke wyse.

The seconde rule of whole number, wyth numbers broken semeblable.

If .10. elles & .2. thirde partes of cloth cost .35. franc, howe muche shall cost .14. elles by the price. Answer. For to know this rule and other semeblable, it beho- ueth you to reduce the elles boughte, & them that ye wyll bye all into thirde, because of them that be bought, in say- ing thus: 3 tymes 10 is 30, and set ther- to 2 thyrdes, that is than .32. thyrdes. Then it behoueth you to make deuisi- on by .32. and than ye shall reduce the 14, elles into 1 thyrde, in saying 3 tymes 14 is 42. Then .42. shalbe the multipli- catour. Now set the summe, that is to
- wyl

Of Rules.

Wyt 35 franc. the whych multiplied by 42, be 1470, the whiche deuided by 32. therof commeth 45 franc. and an half, and ther resteth 14 franc. the which ye shal reduce to shillings, & than deuide them by 32, & therof commeth 8.s. & an halfe, and than shal ye make them in pence, and deuide them by 32, and therof commeth 3 pence, therfore ye maye answer that the 14 elles of clothe shal cost 45 francz and an halfe, 8 shyllings and an halfe and 3 pence.

Foz to make the pzoofe, it behoueth you to make your woozke by the contrary, foz it behoueth you to multiplie the summe that the 14 els cost by the deuisor, and deuide it by the multipliatour. Therfore set the summe vpon the left syde, and first multiply the 3.s. by 32, and whan they be multiplied, ye shal make of them shillings, and then ye shal multiply the 8.s. and the halfe by 32, and then make thereof francz And then ye shal multiplie the 45.
francz

The Rules.

francz, and the halfe by 32 , and deuide them by 42 , and so ye shal know if the rule be well made.

The third rule of Whole numb=

bers wyth diuers minutes.

If 4 elles and 2 thirdeg of cloth cost 10 crownes, how much shal cost 6 elles & 2 quarters by the price. For to know this rule, it behoueth you fyrste to reduce the 4 elles and 2 thyrdes thus, 3 tymes 4 is 12 . And than ye shal adioyn the 2 thyrdes, and than it is 14 . & then the elles that ye wil bye, ye shal reduce them into one fourth thus: 4 tymes 6 is 24 . And then set the 2 quarters ther to, and than there is 26 quarters. And than ye shal multiply that one by that other, that is to wyt the numbzant of the firste by the denominator of the second, in saying: 4 tymes 14 is 56 . And that 56 shal be the denisor. Then multiply the numbzant of the secod, by the deno=

The Rules.

Denominant of the fyrste, in sayinge: 3
tymes. 26. is. 78. and that 78. shalbe the
multiplicatour. And therefore set .10.
crownes and multiplie them by 78. &
Deuide them by .57. and ye shall fynde
that the .6 elles and 2. quarters cost. 13.
crownes and an halfe. 15. shyllinges & .5
pence. And there resteth. 8.

The example.

Diuisor.	M.
59	78
10 crowes	
146	2
3	4

If 4 elles ²/₃ cost 10. crownes, 6. elles
²/₄ shal cost. 13. crownes and an halfe. 15.
shyllinges. 5. pence, there resteth 8.

For to make the pzoofe, it behoueth
you to worke the contrarpe, you muste
multiply the sum by the diuisor, that is,
to wyt, by 59. and make diuision by the
multiplicatour, that is to wyt by .78 &
ye shall fynde. 10, other wyse if there be
more or lesse, the rules be false.

The

The fourth rule containing
whole numbers to the marchaun-
dise that ye haue bought, &
minutes to the same
that ye wyl bye.

If 8 elles of cloth cost 15 crownes, how
much shall cost 2 quarters by the price.
For to know this rule, ye must reduce
the 8 elles into quarters, in saying: 4
tymes 8 is 32, then 32 shall be the de-
uisor, and the 2 quarters shall be the
multiplicator. Now set the 15 crownes
and multiply them by 2 quarters, and
deuide by 32, and ye shal finde that the
2 quarters cost 0 crownes, & the halfe
15 shyllinges and an halfe 3 pence. For
to make the pꝛoofe ye must worke the
contrary, for ye shal multiplie the sum
that the 2 quarters cost, that is to wyt
0 crownes, & the halfe 15.s. and an half
3 pence by 32, and deuide them by 2.

The rule of round measures
that is to wyt, measure of corne,
of wyne, and of oyle.

H.i.

Hy2a

The Rules.

First it be houeth you to presuppose
and know the measures of coꝛne.

One muy is woorth 12 septiers.

One septier is woorth 4 minotes.

One mynot is woorth 3 bushels.

One bushel is woorth 4 quarters.

¶ The measures of wyne.

One muy of wyne holdeth 36 septiers.

The septier holdeth 4 quartes.

The quart holdeth 2 pyntes.

The pynte holdeth 2 choppynes.

The choppyne 2 halfe septiers.

The halfe septier 2 possions.

¶ The fyrst rule.

If the muy of coꝛne cost 19 frances,
how much is woorth the bushell. An-
swer. For to knowe thys rule, ye must
know how many bushels is in 1 muy.
Therfore multiply the muy by 12, and
than by 4, and than by 3, whych com-
meth to 144 bushels, the whych shall
be the deuisor of 10 francz, therfore de-
uide 10 by 144. And thereof comineth
1. s. 4. d. and an halfe, resteth 24. pence

There

The Rules.

Therefore the bushell costeth 1. s. 4. d.
and an halfe, resteth 24. d.

The second rule.

To the contrary, if the bushell cost 1.
s. how much shall cost a thousand and
4 hundred mays by the price. Answer.
For to knowe this rule, it behoueth
you to make all the Mays in bushels.
And there be 201600 bushels, & which
it behoueth you to multiplie by 2, and
there be 403200, and of them ye shall
make crownes. Therefore deuide by 36
and there bene 1200 crownes. There-
fore ye may answer, that if the bushell
cost 2. s. a thousande and 4. hundred
mays shall cost a leuen thousande, and
2 hundred crownes, and thus ye may
do of all other semblable.

The thyrde rule.

If the septier of corne be woorth 1 sz
& the loafe of peny lozneys wayght 12
ounces, how much ought it to weygh
when the septier is woorth 15 lozneys.
Answer. Multiplie the first nōber by the
second

H.ii.

The Rules

second, that is to w^yt, 20 by 12, and De-
uide it by 15, and ye shall fynde that it
ought to weygh 16 ounces. And thus
ye may do of all other lyke.

If the m^yp of wyne be woorth 12
francz, how much ought the p^ynte to
be woorth. Answer. For to know this
question, it behoueth you to reduce the
12 m^yps into septiers, from septiers
into quartes, and from quartes into
p^yntes, and they be 188 p^yntes. And
than ye shall reduce the 12 francz into s
that is 240, and that into pence, that
bene 2880, pence, the whych behoueth
you to deuide by 288, and it cometh
to 10. d. Therefore if the m^yp of wyne
cost 12 francz, the p^ynte is woorth 10. d.
But it is requisite that the Tauerner
haue some gynes. If he sell 12. d. the
p^ynte, I demaunde how much shall he
win vpon the m^yp. Answer. He selleth
it 2. d. more then it is woorth, therefore
multiply 288 p^yntes by 2, and they be
576, the whych ye may deuide by 12,
and

The Rules.

and there shalbe 48.s. Therefore may
ye aunswer that he getteth 48.s. vpon
the mup.

If the mup cost 10 francz, how much
is woorth the pynte. Answer. It be-
houeth you to doo as is aboue sayde,
and ye shall fynde that it is woorth.8.
pence and one thirde.

If the pynte cost 6 pence, how much
shal cost 12 mups by the pryce. Answer
It behoueth you to know how many
pyntes be in a mup, that is 288, multi-
ply 12.mups by 288, that is 3456 pints
And than multiplie the pintes by 6,
that is 20736, of which summe ye shall
make .s. by deuision, and there bene
10728.s. & of wyllinges ye shall make
francz. Therefore ye shall make deuisi-
on by 26, ye shall fynde 86 francz .8.s.
Therefore ye may aunswer that the 12
mups shal cost 86 francz .8.s.

In so muche as competently we
haue treated of the rule of thre
in the sayct of measures, it is ex-
pedient

The Rules.

pedient that we treate therof in the sayct of weight.

If an hundzeth pounde of pepper cost 20. s. how much shall cost 6 pound by the price. Answer. For to knowe this question, ye must multiplie by the contrary, and deuide by the semblant, that is to wylt, multiply by 6 and deuide by 10, and ye shall finde that the 6 pounde shall cost 1 francz and 4 s. To make the proofe ye must multiplie by 100, and deuide by 6. Now I demaund if the 6 pounde cost 1 franc 4. s. howe muche is woorth the ounce. For to know this ye shall make the poundes in ounces, the whych bene 96 ounces, and then make the money in pence the whych bene 288. d. the whych ye shall deuide by 96, and thereof cometh 3 pence, therefore the ounce shall cost 3 pence.

If one pound of saffron cost 3 franc, and an halfe, how much is woorth the ounce? Answer. It behoueth you to knowe that in a pounde is 16 ounces, ther

The Rules.

therfoze deuide the 3 francz & the halfe by 16, and ye shall fynde that the ounce is woorth 4. s. 4. d. and an halfe, and thus ye may do of other lyke.

If 4 pounce of saffron cost 16 franc. 6. s. 8. d. howe muche shall cost 3 quarters by the price: For to knowe thys rule, ye shall reduce the 4. l. into thirde & shall say 3 tymes 4 is 12, and 1 thyrde bene 14, then ye shall multiply by 4, & shall say: 4 tymes 14 bene 56 the deuisor, thenfor the seconde number yee shall say: 3 tymes 3 is 9 fourthes or quarters, the which 9 shall be the multiplier. Nowe set the 16 francz .6. s. 8. d. tournois, & multiply them by 6 and deuide them by 16, & thereof cometh 2 franc. & an halfe. 2. s. 6. d. Therefore ye may answer that the 3 quarters shall coste 2 franc. & an halfe 2. s. 6. d. For to make the prooffe, ye must worke by y contrary in multiplying by the deuisor, that is to wyte by 56, & make diuision by 9, and so may ye do of other semblable.

¶.iiit.

¶

The Rules.

If one pounce of tyn cost 9 blances, how many hundzeth shal I haue for a thousand and 4 hundzeth franc. It behoueth you to know how muche is woorth the hundzeth by 9 blances the pound. And ye shal finde that there is 12 franc. and an halfe. Now make deuision of 1400 frances by 12 frances and an halfe, ye shal finde 112. Therfore ye may say that I shal haue 112. pound of tyn for 1400 frances. And also as ye haue made this rule, ye may doo in all other marchandise, as in leade, yron, spices, pepper, suger. And as ye haue done of poundes, ye may doo of quarters, ounces, and al other weyghtes,

A rule wythout tyme.

Three Marchauntes put theyr money together for to haue gaynes, the which haue bought such marchandise as hath cost 125 franc. the first hath laid 25 franc. The second 64 s. and the thirde 36 s. And they haue gotten

The Rule.

gotten 54 franc. of cleare gaires. I Demaund how shal they Deuide it, so that eche man haue gaires according to the money that he hath laid Downe. Answer. In al suche rules and questions ye shall multiply eche one after the money that he had layd, therfore multiply the gaires for the fyrst by 25, & Deuide by 125. that is the diuisor common. For the second multiply the gaires by 64 and Deuide by 125 the diuisor common. And for the thyrde multiply the gaires by 36, and Deuide by 125 the diuisor common. And for to finde the diuisor common, ye shall set together the multipliers, that is to wyt 25, 64, and 36, which is 125 the diuisor common. And so shall ye do in all rules of company. Now ye may finde & know how much eche one hath of gaires, and ye maye see it by the example here present.

The first hath 10 £3 and halfe 2 s. The seconde hath 27 franc. and halfe. 2 s. and halfe 5 d. and half, resteth 2 d. and halfe

The Rules

halfe. The thirde hath 15 franc. and an halfe 5. s. resteth 0 pence.

256436.

125.

Multiplicatours.

Diuisor.

And they haue yet to be deuided among them of restes 62. d. and an halfe.

For to make the proole, it behoueth you to deuide the restes, and then reduce altogether, and ye shal finde the sum deuided, for all the rules of company ben proued by addicion of sums.

The seconde rule of whole tyne.

Ifoure Marchauntes laye money together for wyning for a certayne tyne of whō the first hath layd 10 fr. for 2 yeare. The seconde 20. fr. for 3 yeare. The thirde 100 fran. for one yeare. And the fourth hath layde 40. fr. for 4 yeare, and they haue gained 454 fran. I demand how muche eche one ought to haue of winning after the money that he hath layde, and after the tyne

The Rules.

tyme that he hath holden hys money in gayne for company. Answer. For to knowe this rule and other semblable, ye shall multiply the money that eche one hath laid by the time that he hath holden it in company. Example. The fyrst hath laid 10 fran. for 2 yeare, therefore it behoueth you to multiply 10 by 2 in sayinge: 2 times 10 is 20. For the second 3 tymes 20 is 60, for the thyrde tyme 100 is an 100. For the fourthe 4 tymes 40 is 160, and then it behoueth you to finde a Diuisor comon, for eche hath his multiplicator, that is to wyt, the same that he hath layde, and for to fynde it ye shall set together all the multiplicatours, that is to wyt, the 20, 60, 100, 160, the which maketh 340 therefore these 340 shall be the Diuisor common to all, then howe muche eche one ought to haue ye may see by the example here following 454.8.

The first hath 26 franc. and halfe. 4. s. one peny, resteth 140.8.

The

The Rules.

The second hath 80 francs .2. s. 4. d.
rest 80 pence.

The thyrde hath 134 francs .1. s. 5.
pence, rest .20. pence.

The fourth hath 213 franc. & an halfe
2. s. and an halfe .5. d. rest 100. pence.

20. 60. 100. 160.

340

Multiplicatours. Diuisor.

Of rest they haue to deuide one peny.

The rule of company, wher
as is whole tyme, and partes
of tyme.

Three Marchauntes laye money in
companye for to haue gaynes there
by, of whom the fyrste hath layde 30
franches for two yeares. The seconde
hath layd 40 franc. for one yeare and
thre monethes. And the thirde hath
laid 60 franc. for thre yeares and two
monethes. And they haue gained with
this money 44. franckes. I demaund
how thei shal deuide it, to the end that
ech one haue his right after the money
and

The Rules

and the tyme that they haue set & holde
den for to gayne. Answer. For this
rule & al other semblable, ye shall mul-
tiplie the tyme by the money, as wee
haue sayd aboue. But for as muche as
there be monethes, ye must set and re-
duce all the tyme of eche one in monethes,
and also if there were any dayes,
ye should set al the tyme in dayes. The
first hath layd 30 frances for 2 yeares,
in 2 yeares is 24 monethes, therefore
multiply 30 by 24, there bene 720. and
this 720 shall be the multiplicatour of
the first. The second hath layd 40 frā-
ces for 1 yeare and 3 monethes, in one
yeare bene 12 monethes, and 3 doth
make 15 monethes, multiply 40 by 15,
they make 600, which is the multipli-
catour of the seconde. The thirde hath
layd 60 franc. for 3 yeares and two mo-
nethes, in 3 yeares is 36 monethes. & 2
maketh 38 monethes. Now multiply
60 by 38, and they be 2280, which shall
be the multiplicatoz of the thyrde. Now
for

The Rules,

for to haue a deuifoz common, ye shall set together all the multiplicatours, that is 3600 the diuifoz common. They haue to deuide 44 francs. The fyrste hath 8 francz, and half. 6. s. rest 0. The second hath 7 francs .6. s. and halfe, rest 0. The thyrde hath 27 francs and halfe 7. s. 4 pence. rest 0.

720. 600. 2280.

Multiplicatours.

3600.

Diuifoz.

A rule of diuers syluer, and diuers tyme.

Three Marchauntes haue made company together, of whom the fyrst hath layd 10 franc. 4. shyllynges for 2 monethes. The second hath layd 15 franc. for one yeaere. And the thyrde hath laid 6 fran. 7. s. for 8 monethes. & they haue gotten of this money 24 £. How they shall deuide it after the money & after this tyme I demaund. Answer. For to know thys rule and all othyr semblable, it behoueth you to reduce

The Rules.

duce the money of enery man into shillynge. And all the tyme in monethes, And then multiply the money by the tyme. Example. The fyrst hath layde 19 francs; that is 200. s. and 4 is 204, the which ye shal multiply by 2 monethes, and they shall be 408 the multiplicatour of the fyrst. The second hath layd 15 franc. for one yeare and in 15. s. bene 300. s. and in one yeare is 12 monethes, therefore multiplie 300 by 12, and ther shall bee 3600 the multiplicatour of the seconde. The thyrde hath layd 6 franc. 7. shillynge, and in 6. frā. is 120. s. and 7. bene 127. s. for 8. monethes, therefore multiplie 127 by 8, & they shall be 1016 the multiplicatour of the thirde. And for to haue the Deuisor common, ye must reduce together all the multiplicatours, and that shall be the Deuisor common, as ye may see by the example following. They haue 24 francs of winning.

The first hath 2 franc. and halfe 8. s. and

The Rules,
and halfe .5. pence, and halfe, resteth
1360 pence.

The second shall haue 17 franc .3. s.
and halfe .6. resteth 1952. pence.

The third shall haue 4 franc. & halfe,
7. s. 0. pence, & half, resteth 17112 pence.
408. 3600. 1016. 5024.

Multiplicatours. **Diuisors.**

And i. d. is to deuide of the restes.

For to make the prooffe, ye shall re-
duce together the thre summes that
they haue had. And if there be more or
lesse, the rule is euyl made.

The rule of company of factours wyth Marchaun- tes Seruauntes.

Of this rule of factours ye maye
make 3 rules in maner of questi-
ons that fall among Marchauntes.
Example. 8 Marchauntes 5 factours,
and 3 Seruauntes or Warlets haue
made company together, & haue cleare-
ly gotten 150 franc. whereof the fac-
tours

The Rules.

tours oughte to haue the halfe of the
Marchauntes & the Seruauntes the
third part of the factours, howe shall
they deuide these 150 franc. Answer.
for all such rules and questions it be-
houeth you to finde a number wherein
is an halfe and a third, and that shalbe
6 and this 6 shall be for the Marchant.
And the halfe of 6 is 3, that shall be for
the factours, and the third part of the
factours is 1, which shalbe for the ser-
uauntes. And then ye shall multiplie
the one by the other, that is to wyt, the
personages by the 2 number, 6 tymes
is 48, and this 48, shall be the multi-
plicatoz of the Marchantes. And the
there is 5 factours, that haue 3, and 3
tymes 5 is 15, and then there be 3 Ser-
uauntes that haue 1, and 1 tymes 3 is 3
and therfore the factours shal ye mul-
tiply by 15, and the Seruauntes by 3.
Now for to finde the diuisor common
ye shal set together all the multiplica-
tions, that is to wyt, 48. 15. 3. which be
3. i. 66, these

The Rules,

66, these 66 shalbe the deuisor common
Example, they haue to deuide 150. franc.

The Marchauntes haue 109 franc. 1. s.
and halfe 3. d. and halfe, resteth 12. d.

The factours haue 34 franc. 1. s. and
halfe 3. d. and halfe, resteth 21. d.

The Seruauntes haue 6 franc. and
halfe 6. s. 4. d., rest 24. pence.

48. 15. 3.

66

Multiplicatours.

Diuisor.

They haue to deuide 1 peny of restes.

For to make the prooffe ye shal deuide
all the restes by the diuisor common.
And then ye shal reduce altogether, for
to haue 150 fraunces.

The Rule of Factours, the
whych got the halfe of the gayne
and of the principall.

An other rule in manner of a questi-
on. A Marchaunt hath geuen 50 franc.
to his factour, by such couenant that
he gouerne them for ten yeares. And

at

The Rules.

at the ende of the tyme, that is to wye
at the ende often yeaeres they shall de-
uide the gayne and the principall. It
happeneth that the factour wyll goo
his way at the end of 6 yeaeres, and he
findeth that he hath gayned a thousand
fran. I demaund how ought the sayd
factour to be payde, and howe muche
ought the said Marchant to haue. An-
swer. Ye ought to regard how muche
he should haue gained in those 10 yeres
that he should haue holden them in
gayne as he had promised. Therefore
ye maye forme the question: if 6 haue
gotten a thousand, how muche shall be
the gaynes of 10. Multiply 1000 by 10
and deuide by 6, and ye shall fynde that
he should haue gotten 1666 franc. and
an halfe 3. s. 2. pence. Of the wyche
gaynes the Marchaunt ought to haue
the halfe, that is 833 franc. 6. Millinges
and halfe and 1 penye. And thou take
bp those 833 franc. 6. Millinges & halfe
peny of 1000 fra. that he hath gained
I.ii. and

The Rules

and there remayneth 166 franc. 13 shyl-
linges 5 pence for the Factour. Nowe
ye may aunswer that the Marchaunt
shal haue of the gaines 833 franc. 6 shyl-
lynges, and halfe 18. And one halfe of
the principal, that is to wyt of 50, that
is 25, and there be 858 franc. 6. s. & half
1. d. And the Factour shal haue of gain
366 franc. 13. s. 5. pence. And of the prin-
cipall 25 that is 161 franc. 13. s. 5. d. And
thus may ye do of all other semblable.
And it is proued by the reduction of
the twoo summes gayned.

The third rule of Factours
with couenauntes, that the fac-
tour shal gayne the halfe of
the principall

An other rule of compaignie of fac-
tours & Marchauntes which couenāt
that the factours shal gayne the halfe
of the principal, and not of the gayne.
Example. A Marchaunt geueth vn-
to hys Factour 400 franc. that hee shal
gouerne

The Rules.

gouverne them for 6 yeares, and at the end of the tyme the halfe of the principall shall be to the factour. It happeneth the factour wyll go his waye at the ende of 2 yeares, and hath gayned 200 franc. I demaund how ought the factour to be paid. Answer. We ought to regard howe much he shoulde haue gayned, if he had serued al hys tyme, & for to finde it ye may worke by the rule of threec, for ye must multiplie by hys contrary, that is to wyt by 6 & deuide by his semblant, that is by 2, in saying if 2 haue gayned 200 franc. how much shal 9 gayne? We shall finde $\frac{1}{2}$ he shoulde haue gotten 900 franc. and he gayned but 200 franc. Wherefore he ought to make agayne 400 franc. to the Marchaunt, and he ought to haue the halfe of the principall, that is 200 frances, therefore he oweth 200 vnto the Marchaunt, and so he hath lost all his time and 200 franc. of aduantage, for the Marchaunt ought nothing to lose like

The Rules.

as he had accomplished all hys tyme.

The third rule of chaunges
for to vse Deceit or fraude.

Two Marchauntes wyll chaunge
theyr marchaundise, & the one be-
giled the other, the one hath pepper, &
the other cloth. He that hath pepper
wyll sell for 25 franc. the hundreth by
chaunge, which is no more worth the
20. fran. in syluer contented. I Demaund
for how much ought the other to sell
vnto him the elle of his clothe, that is
worth but 15. s. to keepe hym self from
losse. Answer. For the rule of thre ye
may say thus: if 10 frances of content,
geue me 25 franc. at the chaunge howe
much shal geue me 15 of content. It bee-
houeth you to multiplie the 25 by 15,
which bene 375, the which ye shal de-
uide by 20 and thereof cometh 18. s.
9. d. therfore ye may say that he shal sel
the elle of clothe for 18 shyllynges. 6. d.
And thus may ye do of al other.

Two

The Rules.

Two Marchauntes wyl chaunge their marchaundise, of whom the one hath 100 pounde of woolle, that is no moze woorth but 15 crownes. And he wyl chaunge with an other in a peece of cloth that is woorth 21 crownes, & he wyl geue hym the woolle for 17. crownes. I demaund for howe muche ought the other to sell the peece of cloth to the ende that he be not betromped. Answer. By the rule of thre, when 15 are woorth 17, demaund howe muche shall be worth 21. Deuide by 15, and ye shal fynde the same that ye requyre.

Two Marchauntes wyl chaunge their marchaundise, and the one defraud the other that hath pepper, and wyl sel it for 24 franc. the hundredeth by chaunge, which is no moze worth but 20 s in money content, & he wyl haue the halfe in mony content. I demaund for howe muche ought the other to sell the elle of his cloth, which is no moze worth but 15 s. Answer. Ye must take
I.iiii. away

The Rules.

awaye the money content that the o-
ther Demaundeth, that is 12 franc. for
the iust price, & of the which he wyl sell
ouer. Therefore take away and wyth-
drawe 12 of 20 franc. which is the iust
price, and there rest 8 fran. for 8 and 4
is 12. And ye mai say by the rule of thre
if 8 geue me 12. what shall geue me 15. &
which is the iust price of the cloth, mul-
tiplie 12 by 15 and deuide by 8, and there-
of cometh 22. & 6 d. And therefore the
Marchant ought to sell the elle of his
cloth after 22. & 6. d. els he should haue
losse. And thus ye ought to do of al ma-
ner of chaunges and barathes, for if
he that hath the pepper, Demanded
but the thirde or the fourth, or 2 or 3, a-
bate al onely the same that he shall de-
maund, and then by the rule as is said
And note ye wel, that if ye wyl multi-
ply shillinges, ye shall haue shillinges.
And of crownes ye shall haue crownes
and of frances ye shall haue frances.
And in lyke maner of all other.

COther

Other rules and questions
to haue the moze knowledge of the
science of Arithmetike, and the
first is of collectes & talliages.

TEn men owe vnto the King of col-
lect and talliage 244 franc. I de-
maund how they shall deuide them, to
the ende that eche one pay after the va-
lour of his goodes, for it is reason that
moze be payd by the ritche, then by the
pooze. For he that is moze endowed
wyth goodes is moze bounden vnto
God & to the Prince. Answer. It beho-
ueth to know howe muche eche one is
worth in his goodes and possessions.

The first is woorth 100 frances.

The second woorth 400 franc.

The thyrdd is woorth 154 franc.

The fourth is woorth 1000 franc.

The fyft is woorth 1150 franc.

The syxt is woorth 40 franc.

The seuenth is woorth 440 franc.

The eight is woorth 80 franc.

The ninth is woorth 600 franc.

The tenth is woorth 300 franc.

Now

The Rules:

Nowe it behoueth you to finde the multiplicatour and the diuisor. The multiplicatour shalbe eche one by hym selfe, and so for the firste it behoueth you to multiply by 100, for the seconde by 400, for the thirde by 154, and so ye must do of al the other. And for to find the diuisor, ye shall set together all the multiplicatours, as 100.400.154 &c. & all that together shall be the diuisor common, which is 4464. Therefore multiply & collect, that is to wote 244 for eche one his valour, and deuide by 4464.02 by the halfe, that is 2232, and then ye shall wote how much eche one ought to pay. ¶ Example,

The first shoulde paye 5 franc 9 shyllynges 3.0. and halfe, rest 1464.

The seconde shoulde paye 12 franc. 17. shyllynges 3.0. resteth 1292.

The thirde shoulde paye 8 fran. 8.3.4 pence, resteth. 660.

The fourth shoulde paye 54 frances 15 shyllynges 2.0. resteth 1248.

The

The Rules

The fift should pay 62 francs 17. s. 2. pence, resteth 96.

The syxt should paye 2 francs 3. s. & halfe 2. d. and halfe, resteth 1032.

The seuenth should pay 24 francs 1. s. 0 pence, resteth 192.

The eyght shoulde paye 4 franc. 7. s. 5 pence, resteth 2064.

The nynt shoulde paye 23 franc. 6. s. 10 pence and halfe, resteth 1088.

The tenth shoulde paye 27 franc. 6. s. 7 pence, resteth 624.

And they haue to deuide 2. pence and halfe of restes.

¶ Then when ye haue all deuided, & wozit the summe and the restes, ye shal set together all the restes, and deuide them by the diuisor common, or by the halfe. And if ther be moze or lesse, the rule is not well made, for the remaynant of all ought to be deuided by the diuisor comon. And the prooffe of this rule is reduction. And marke well this rule for it is ryghte good vnto the country

The Rules.

country where all the goodes be pray-
sed by al the Townes and Castels, as
it is in manye places of Dauphine,
and of Prouence.

The rule of thzee milnes.

One man hath thzee milnes of w^ho
one grindeth ech day 5 septiers of cozn
and the other grindeth 7 and the third
8. There commeth a Marchaunt that
wyl haue grounden one hundzeth sep-
tiers of cozne, I demaunde how ought
the Mylner to deuide the cozne to the
mylnes, to the ende that eche one haue
as soone done as an other. Answer. For
to know this questiō and rule, ye must
finde the diuisor and the multiplicator.
The multiplicator shall be eche one by
hym selfe, & the diuisor shall be the thzee
multiplicators set to gether, they be 20.
Therefore if ye wyl know how much
cozne ought to be layd vpon the fyrst
mylne, ye must multiplie the 100 sep-
tiers of cozne by 5, and deuyde by 20.
whych shall bee 25 septiers, that shall be
layde

The Rules.

layde vpon the first mylne. And for the second ye shall multiply 100 by 7, and deuide by 20, and there shall be 15 septiers, the whych ye shall put vpon the second mylne, and for the third ye shall multiplye 100 by 8, and deuide by 20, and there shalbe 40 septiers, which ye shall put vpon the thirde mylne. And thus may ye doo of all other sembla- ble. It may be made otherwoyse, set to- gether the summes that the thzee myl- nes grynde, that is 20, and by the rule of thzee, ye shall say: if 20 geue me an 100, how much shall geue me 5 or 7. or 8. And it is proued by Addition.

Example.

The fyrst shal haue 25 septiers. The seconde 35 septiers. The thyrde 40 sep- tiers.

7.5.8.

Multiplicatours.

20.

Diuisor.

The rule and question of a
Shephard or Pastour.

four

The Rules.

Foure men haue 300 sheepe or muttōs, of whom the fyrst hath an 100 sheepe, the second 40, the the thirde 150, & the fourth 10. And they geue vnto a shepherd for to kepe these shepe 25 franc. for a yere. I demaunde how ought eche one to paye of the 25. fr. after the shepe that he hath. And how long time ought eche one to haue him at comunons or meate. Answer. For to know this rule & al other semblable, it behoueth you to finde the multiplicator & the deuisor. The multiplicator of the first shall be 100, of the second 40, of the thirde 150, & of the fourth 10, & than set together al these sūmes the whych be 300 the diuisor cōmon. Or ye maye make it by the rule of thre in saying: if 300 geue me 25, how much shall giue me 100 or 40, or 150 or 10, and alwaies Deuide by 300, & thus of all other rules.

¶ Example of the first.

100	9 francz.	6 s.	8. d.
40	3 franc.	6 s.	8. d.
			150

The Rules.

150	11	franc.	10	s.	
10	0	franc.	10	s.	6. d. 300
Multiplicatours.			Diuisor.		

Now for to knowe howe long eche one oughte to nourishe hym, ye must make the yeare in monethes, and than multiply by the multiplicatours, as is sayde aboue, and deuide by 300. Or to make it moze sure and certaine, ye shal set the yeare in Dayes, that is 365, and then multiply eche one by his multiplikatour, & deuide by the Diuisor common, that is to wyte by 300, & ye shal fynde that the fyrst ought to nourish y^e sheperd 121 Dayes and a halfe, and a syxt part. The second 48 Daies and a halfe and a syxt part. The thyrde 182 Dayes and an halfe. And the fourth 12 Dayes, and the syxt part of a Daye. And thus may ye do of all other rules.

**The rule and question of a
bestell wyth thre fountaynes
or holes.**

A vessel

The Rules,

A Vessel holdeth 60 Septiers of wyne, in the which there be three fountaynes or holes, of whom if the least runne it should empty 1 septier in an houre, the next 2 septiers in an houre, the thyrde 5 in an houre. It happeneth that it runneth at all the three fountaynes at once. I Demaunde in how many houres the vessel shall voyde, and howe muche eche one shall voyde by it selfe. Answer. For to know how muche eche one shall voyde, it beho- ueth you to fynde the multiplicatours, therefore Deuide 30 by 1, and it is 30. which is the multiplicator of the first. For the second Deuide by 2, and there- of commeth 15 And for the thyrde De- uide by 5, and that is 6. And than sette together all the summes, that is to wylt. 30. 15. and 6. and they be 51. Ther- fore multiply eche one by hym selfe, & Deuide by 51.

¶ Example.

30	35 septiers, 1 quart & an halfe
15	17 septiers, 1 quart & an halfe.
	rest

The Rules.

rest 4 and halfe.

6 7 septiers 0 quarte, rest 12.

Multiplicatours.

Diuisor.

And for to knowe in howe manye houres this vessel shall voyde, ye shall set together the thzee numbers, that is to wyt: 1. 2. 5 which bee 8. and that 8 is the diuisor, therefore deuide 60 by 8, & ye shall fynde that in 7 houres and an halfe it shall be empty. And thus maye ye doo of all other semblable.

The rule & question of Zafaring, for to cast them into the sea

There is a Gally vpon the sea, wher in be thirtye Marchauntes, that is to wyt, 15 Christian men, and 15 Zafaring, ther falleth great tēpest, wher vpon it behoueth them to cast all the marchaundise into the sea, and yet for al that they be not in surety from perishing, for the Gallie is feable or weake, so þ by a decree made by the Patrone
k.i. it is

The Rules,

it is necessarie that there be cast into the sea the halfe of the. xxx. Marchants but the Farazins wil not be cast in nor also the Christians: Then by an appoyntment made, they shall set them down vpon a row, & then count them vnto 9, and he that should fall vpon the 9 to cast into the sea, how woulde ye set them that none of the Christians shoulde be cast into the sea. Answer. Ye shall ordeyne them after these meeters folowynge.

First 4 and then 5, and 2 before one,
Then 3 and then 1 standynge alone.
One and then 2, then 2 and then three,
Then 1 and then 2, and 2 wyth 1 bee.

The Christians name first, & farazins after
In al these numbers, which stand so in order.

That is to wote, 4 Christians 5 Farazins, 2 Christians 1 Farazin, 3 Christians 1 Farazin, 1 Christian 2 Farazins, 2 Christians 3 Farazins, 1 Christian 2 Farazins, 2 Christians 1 Farazin.

Or for to know it more shortly ye may
woteke

The Rules.

woorde by this verse folowing, by the
number of these vowels.

⁴ Now ⁵ turn ² thee ¹ man, ³ sit ¹ and ¹ take ² rest,
Be it as then be was.

The rule and question of a Testament.

A Man hath made hys testament,
by which hath left his wife great
with childe, & hath ordained in
his testament, that if she brought forth
a sonne, he should haue 2 partes of hys
goodes, & is to wit of 1200 crownes &
his wife & other part, & if she brought
forth a daughter, then the mother should
haue 2 parts, & the daughter the other
part. It happeneth when the man is
dead, the wife bringeth forth a sonne &
a daughter. I demaund how shal they
deuide the 1200 crownes. Answer. We
shal set 1 for the daughter, and 2 for the
mother, for the mother ought to haue 2
partes against the daughter, and set 4
for the sonne, for he ought to haue two
ii. partes

The Rules,

partes against the Mother. Therfore
ye shall multiplie the 1200 crownes by
4 for the Sonne, by 2 for the Mother,
and by 1 for the Daughter. And for to
finde the Diuisor, ye shall sette together
1.2. and 4, which bene 7, therfore De-
uide by 7.

Example.

4 The Sonne shall haue 685.
crownes and an halfe .7. s. 8. d.
and halfe, resteth a halfe. d.

2 The Mother shall haue 342.
crownes, & an halfe. 12. s. and
halfe 4 d. resteth 2. pence.

1 The Daughter shall haue 171.
crownes. 15 s. 5 d. resteth 1 d.

421.

7.

Multiplicatours.

Diuisor.

They haue to deuide an halfe peny.

The rule and question for to
buylde, and first for the place.

A Man hath a grounde that is in
length 100 yardes, and in bredth
70 yardes, where as he wyll edy-

fyre

The Rules.

ye & bulde houses, of length 5 peares
and 4 of breadth. I demaunde howe
many houses shall he haue vpon that
ground. Answer. Ye shall multiplie
the length by the breadth in saying 70
tymes 100 bene 7000, and eche house
must haue 5 yardes of length, and 4 of
breadth, multiply the one by the other,
and they make 20, which 20 shall be the
diuisor comon, therefore deuide 7000 by
20, and ye shall finde that there shall be
350 houses. Note wel thys rule.

A rule and question of the walles.

A Man wyll make a wall 32 foote
in length, and 2 of thicknes, and
the heyght 25. foute, eche foote
shall cost the making 2 s. I demaunde
howe muche shall cost the making of all
the wall. Answer. For to knowe thys
rule, ye shall multiply the length by the
thicknes, in saying: 2 times 32 ben 64,
and then ye shall multiply it by heyght
K.iiij. in

The Rules.

in saying: 25 tymes 64 is 1600, & than multiply by the price, that is to w^ort by 2 w^ollynges, the wh^oche be 3200 w^ollynges, wherof ye shal make frances, therfore deuide them by 20, and they be 160 frances. And so muche shal cost the makynge of the wall.

The rule and question of the tylng of a house.

If you w^ol haue a house couered w^o tyles, ye must know how many tiles behoueth you to haue vn to y^e lēgth of a lygne, and how many to the bredth. Example. If the house had nede of 54 for the lengthe, and 54 for the bredth, I demaunde howe manye shoulde be requisite vnto all the house. Answer. Multiplie the lengthe by the bredth in saying 34 tymes 54 ben 1836 tyles, and so many must ye haue to couer the house.

The rule and question of a garden.

The Rules.

A Louer byd enter into a Garden
for to gather apples for his lady
and vnto the said garden be thre
gates, and in eche gate is a porter, and
whan he shall issue after that he hath
gathered the apples, he must geue the
halfe of hys apples and one to the first
porter, and when he is at the seconde
porter, he must geue vnto him the half
& one, and to the thyrde porter the halfe
and one, and whan he is forth he hath
no more but one apple to geue vnto
his lady paramour. I demaund howe
many apples had he gathered. Answer
He had one apple when he was forth,
set to it one, and than it is 2, then Dou-
ble the 2 and it is 4, therefore he had 4
at the thyrde porter. Then to this 4 set
1 and that is 5, and then Double them
and it is 10, therefore he had 10 apples
at the secoud porter, to this 4 set 1 and
it is 11, Double them and they be 22 ap-
ples. Therfore ye may say that he had
gatherd 22 apples.

x.iiii.

CThe

The rule and question of a ladder or staire.

I haue sen a staire that had 100
steppes, in the first steppe was 1
douffe, in the second steppe 2, in
the third 3, in the fourth 4, and so vnto
100. I was demaunded howe manye
douffes were in all the staires. I an-
swered 5050. Probation, I wyll geue
you certaine of al numbers that do pro-
cede naturally, that is to wylt, 1.2.3.4.
5.6.7.8.9.10. And infinitely as ye wylt,
for al number naturall is ended in nu-
ber euen, or in number not euen, if it
be ended in number euen, than by the
halfe thereof multiply the number not
euen, that encloseth it. **E**xample.
1.2.3.4. wylt ye knowe what all adimoun-
teth vnto in saying: 2 tymes 5 is 10, for
2 is the halfe of 4, and 5 is the number
not euen that encloseth 4. And if the
number ende in number not euen, as
by example 1.2.3.4.5. Wylt ye knowe
what all amounteth vnto. Multiply 5
by his greater halfe, that is 3, saying: 3
tymes

The Rmes

times 5 is 15. And thus shal ye alwaies
doo in what number so ever it be even
or not even.

The rule and question

two of men.

If two men go by one waye, and
that they go in to any far place,
and procede in suche wyse, that
the one procedeth eche daye certayne
number of myles, that is to say 4 and
more or lesse. And that other man go-
teth encreasing the first daye one myle,
the second day 2, the third day 3, and so
encreasing after progression. Be ye all
certaine that in some day the one over-
taketh the other. It is demaunded in
what day, and how many myles they
shall go. Answer. Double the number
of his myles that goeth eche day an e-
gal number of myles. And of the num-
ber double take awaie one unite, & the
remanat shal shew you what day they
shal meete eyther other.

¶ Cr.

The Rules.

Example. We shall set it that the one goeth a day 6 myles, double that & it is 12, and fro that 12 wythdrawe one unite, as it is sayd in the rule, and ther remaineth 11, that is the number of $\frac{1}{2}$ day that thei shal meete together. And for to knowe the number of the myles that they haue gone. Multiply 11 by 6, in saying: 6 tymes 11 is 66 myles that they haue gone. Thus may ye knowe it by the rule of progression continued, 11 is a number not even, be it therefore multiplied by the greater halfe, that is to wyth by 6, in saying: 11 tymes 6 or 6 tymes 11 is 66. And also one onely number amount by Progression, & by multiplication, whereby it appeareth that vpon the eleuenth day they mete eche other, and haue gone 66 myles.

The rule & question of the women that bare apples to the Market.

The Rules.

Three women bare apples well and honestly trymmed to the Market, of whom the one bare 50, the other 30, and the third 10, theyr housbandes were bʒethʒen and gaue commaundement to them that they shoulde make as good market one as an other, that they sel al after one pʒice, and that the one bʒyng as muche money home as the other. I demaund howe that maye be done. Answer. It is possible. For first there commeth a Marchaunt to her that hath 50 apples, and sayth to her: how many for one peny, & she answered 7, and so she maketh 7.ʒ. of her 50 apples, and hath remayning one apple. The other solde after the same pʒice. And she that had 30 apples solde hers for 4.ʒ. and she had remayning 2 apples. The other that had 10 apples solde hers for 4.ʒ. and shee had remayning 2 apples. And the came ther another Marchaunt that gaue 3.ʒ. for an apple. And so eche one bare home 10.ʒ. as ye

The Rules.

as ye see in this example. And thus may ye do of all other semblable.

A rule and question of the bagge.

A Marchaunt hath a bagge that weygheth 19 ounces of thre metalles, whereof 7 ounces is of gold, 8 of syluer, and 4 of copper. And he wyll take thereout 5 ounces. I demaund how much of gold, how much of syluer, and how much of copper is in these 5 ounces. Answer. Ye shall multiply the 5 for to know the gold by 7, for the syluer by 8, and for the copper by 4. And for to finde the diuisor, ye shall set al the multiplicatores together, that is 19, therfore deuide by 19. The aunswer is in this example.

7 Of gold 1 ounce and an half. s. 6
5 graynes, resteth 1 peny.

Of syluer 2 ounces, 2 d. & halfe,
1 halfe grayne, resteth 2 pence.

4 Of copper 1 ounce, 1 peny & grai
nes,

The Rules.

nes, resteth 6.

Now let the remnant together and
deuide it be the diuisor common, that is
19. And it is 1 halfe graine.

The rule and question of the bell.

In a church is made a bell, & ther
in is put 30 pound of gold, 50 l.
of siluer, 100 of tynne, and 101 of
copper. Whan the bel is made ther re-
maineth 40 pounce in one peece, that
they wyl lel, I Demaund how much is
there of gold, how much of syluer, how
much of tynne, & how much of copper.
Answer. Ye shall do as is aboue sayde
of the bag, for ye shall multiply 40 eche
one by him selfe, and deuide by 282.

Example.

- | | |
|-----|--|
| 30 | Of gold 4 pounce 4 ounces 4. d.
1 graine, resteth 6. |
| 50 | Of siluer 7 pound 1 ounce 11 pence
9 graines & an halfe, resteth 57 |
| 100 | Of tynne 14 pound 2 ounces and
halfe |

The Rules.

halfe.10.ð.and halfe 7. graynes,
resteth 114 pence.

102 Of copper 14 pound 7 ounces 11
pence and an halfe, 5 graynes, &
halfe, resteth 105.

Multiplicatours. 182 Diuisor comō
And all deuided they haue of restes
one grayne.

This rule is proued by Reduction,
set to the same that remaineth, and de-
uide by the diuisor common, and there-
of cometh one grayne.

The rule and question is chaunge gold into syluer.

A Marchaunt hath 100 franckes in
gold, and he goeth vnto a Chaun-
ger and saith: I haue 100 franc. in
peesces of gold, I would haue the mo-
ney thereof in small peeces, that is to
wyt of 2.ð.of.3.ð.of 4.ð.of 5. pence, of 6.
pence, of 8. pence, and of 10. pence, and
I would haue as many peeces of one
as of an other. I demaunde how ma-
nye

The Rules.

mye peeces of euerye money ought the chaunger to geue hym. Answer. Ye must set together all these numbers, 2. 3. 4. 5. 6. 8 and 10. that is 32, the Diuisor common, and the ye must make of the francz pence, that is 24000. d. whych ye shall deuide by 32, and there be 750 peeces of eche money, and thus ye may do of al other semblable.

The rule and question of cloth of diuers coulours.

I haue a peece of clothe whereof the thirde part is white, y fourth part blacke, and 8 elles of gray I demaund how much hath it of length Answer. Set 12, for in 12 ye shall finde one thirde and one fourth, the thirde and the fourth of 12 is 7, and there remaineth 5, therefore forme the rule of thre, if 5 be comen of 12, of howe muche shall come 58 multiplie 12 by 8, that is 96, and deuide by 5, and thereof cometh 19 elles and 1 fyfte, therefore ye maye,
answer

The Rules.

answer that the peece of clothe hath of length 19 elles and one fitt.

The rule and question of Spiceries.

A Bourgesse sayd vnto his Seruaunt: hold these 13 francs, & go and by the pepper that costeth 15. s. the pound, and suger that costeth 18. s. the pounce, and of fyne spyces that costeth 9. s. the pounce, & gynger that costeth 13. s. the pound, and cloves that costeth 10. s. the pounce, and bring me as manye poundes of one, as of an other. I demaunde how manye poundes ought the Apoticarve to geue hym for 13 francz. Answer. Ye shall set all the prices together .15. 18. 9. 13. and .10 which be in number 65, whych shall be the Diuisor, and then ye shall make the francz in shillings, that is 260 shillings And then ye shal deuide by 65, and ther of comineth 4 pound, therfore ye may answer that he ought to geue hym 4 pound

The Rules.

pound, therfore ye maye answer, that he ought to geue him 4 poundes of all these spiceries.

The rule and question of the Egges

A Young maiden beareth egges to the market for to sell, & shee meeteth a young man that wold play with her, in so much that he ouerthroweth & breaketh the egges euery one, & wil not pay for them. The maid causeth him to be called before the Judge. The Judge condemneth hym to pay for the egges, but the Judge knoweth not how many egges there wer. And that he demaundeth of the mayde, she answereth that shee is but yong, & can not wel count, but she and her mother had ordained & disposed them by 2 & 2 and there remained 1 egge. Then by 3 and 3 & ther remained 1, then by 4 and 4 and there remained 1, then by 5 and 5 and there remained 1, then by 6 and 6 & there

L.i.

The Rules.

There remained 1, and at the last by 7 & 7 & there remained none. I Demaund how many egges there were. Answer. 721. And for to prooue it multiply the numbers one by another in saying: 2 tymes 3 is 6, 4 tymes 6 is 24. 5 tymes 24 is 120, 6 tymes 120 is 720, and let the 1 that remained alwaies, & then they be 721, that which ye shall deuide by 7, and there remayned nothing, and so he had 721 egges. And after this example may the Judge iudge the yong man to pay.

The rule and question of money forgotten wyth a Chaunger.

A Advocate hath geue to a Chaunger money, & hath forgotten how much. For to know how much, and for to haue al his money, he findeth subtilty & ensueth, he saith to one of his sonnes (of whom he hath manye) go vnto such a Chaunger & bryng me a france, and the tenth part of the money that I delyuered him, and so it was done. And

The Rules.

And at another tyme he said vnto another sonne, go vnto the Chaunger, and bring me 2 francs, & the tenth part of the remainant, & so he said vnto al, but vnto the last he said: go vnto the Chaunger, and bring me all the remainant of the money, and so was it done, and as much brought the one as the other. A Demaund howe much money he had, how many sonnes, & how much money eche one of them brought. Answer. For these thre questions pose the number, that they al brought, that is to wit, the tenth be 10, and of 10, take one, and ther do remayne 9, therfore ye may say that he had 9 sonnes, & eche one brought 9 s. And for to know how much he had geuen to the Chaunger, ye must multiply 9 by him selfe, and it is 81. Therfore he had Deliuered 81 franc. to the Chaunger. For to make the pꝛoofe lay 81, and take vp for the first sonne 1, & the tenth part of the remainant, and in like manner ye must do of al other.

L.ii.

The

The rule and question of tyme. &c.

A Man saith: if I had as muche more
of tyme as I haue, & the halfe, the
thirde & the fourth of my tyme that I
haue set to, I should haue of yeaeres 50
I demaund what age he hath. Answer.
Lay 12, to 2 in 12, ye find an halfe, a thirde
& a fourth. And then set therto once as
much, & that is 24, then set therto one
halfe, a thirde, & a fourth of 12, & they be
37, & then forme thy question. If 37 be
comen of 12, of how much shall come 50
Multiply 12 by 50, and deuide by 37, &
ye shall finde that he hath 16 yeaeres 78
dayes and a halfe 10 houres resteth 2.

The rule and question for to deuide distribucions.

A Church be 12 Chanons, 6
Priestes, & 6 Clarkes, they haue
to deuide a distribucion of 400
francs, wherof the Chanons haue 3, the
Priestes 2, & the Clarkes 1. I demaund
how much shall the Chanons haue, how
much

The Rules.

much the Priestes, and how much the
 Clarkes. Answer. Multiply one num-
 ber by an other in saying: 3 times 12 is
 36, that is the multiplicato^r for y^e Cha-
 nons, 2 times 6 is 12, the multiplcato^r
 for the Priestes, 1 tyme 6 is 6, the mul-
 tiplicato^r for the Clarkes. How much
 eche one ought to haue, ye maye see in
 the example by the Diuisor. Set toge-
 ther al the multiplicatours, and they
 be 54, the Diuisor common,

36	240	frances.
12	120	frances.
6	40	frances.
Multiplicato ^r s.	Diuisor.	60

The rule and question of the speire.

A Speyre is the halfe and the thyr^d
 part within the water, & 9, foote w^t
 out. I demaund how much of length
 hath the speyre. Answer. Set 6, for in
 6 is found a halfe and a thir^d, the halfe
 and the thir^d of 6 is 5, and there remai-
 neth

L.iii.

The Rules.

neth, forme the rule of thre: If, be comen of 6, how many shall com of 9 multiply 6 by 9, and they bee 54, Deuide the by 1 and they be 34, therfore ye maye answer that that speire hath 54 foote of length, the halfe is 27, & the third is & there be 45 foote within the water, & 9 without, that is 54. And so maye ye do of al other semblable, as of a foure.

The rule & question of two men that went the one agaynst the other.

Two men begyn to go & take theyr journey the one agaynst the other vpon one daye and in one houre. For that one that goeth fro Paris to Lyons, goeth euery day 7 myles, that other goeth fro Lyon to Paris, and goeth eche daye 9 myles, and from Lyon vnto Paris bene 80 myles. I Demaund how long tyme shall it be or they mete Answer. Set together the myles that they go in one day, that is to wit 7 & 9, which

The Rules.

which is 16. For me now the rule: if 10 come of 1 day, of how much shall come 80 that they haue to go, multiplies 80 by 1, and it is 80, the which ye may deuide by 16, and therof cometh 5, therefore in 5 dayes they meete. The prooofe is, for he that goeth from Paris to Lyons goeth in 5 dayes 35 myles, and the other 45, which be in al 80 myles.

The rule and question of a Cat.

There is a Cat at the foote of a tree the length of 300 foote, this Cat goeth bpward ech day 17 foote, and descendeth at night 12 foote. I Demaunde in how long tyme shal she be at the top
Answer. Take bp and abate the night of the day, that is 12 of 17, & there remaineth 5, therefore the Cat mounteth ech day 5 foote, deuide now 300 by 5, & therof cometh 60 dayes, then shee shall be at the toppe. And thus ye maye doo.

L.iiii.

of al

The Rules.

of al other semblable. For of thys rule,
ye maye make 4 questions, as it appea-
reth in the practyse thereof.

The rule and question of twenty Scolers.

If 20 Scolers owe vnto their Host
5. d. tourneys, howe ought they to
pay so that eche one pay his duty, and
geue the mony of his purs. How much
shall eche one pay. Answer. Eche one
shall paye 1 penye Paris, and the Hoste
shall retorne vnto him agayne 1 penye
tourneys, and so eche one shall pay the
4 part of a turneys.

The rule and question of Pilgrimes.

Twenty Pilgrimes, that is to wit,
men, women, and lyttle childzen,
haue spent in drinke 20 pence, whereof
the men paye 3. d., the women 2. d. & the
litle childzen halfe pence. I demaunde
how many men, & how many women,
and how many childzen be there for to
pay thys 20. d. so that there be 20 per-
sons

The Rules.

song. Answer. Ther shall be one man, 5 women, and 14 chyl dren.

The rule and question of a Chauntour.

A Chauntour hath eche dai of rent fro the Courte of the Prynce 12. s. the which is paied by knyghts, Damosels and Squires, of whom the knyghtes pay 2. s. the Damosels 6 pēce, and the Squires 3. d. I demaund how manye knyghtes, how manye Damosels, and how many Esquiers ought there to be to pay this 12. s. so that there be 12 persons. Answer. There must be 5 knyghtes, 1 Damosel, and 6 Esquiers.

The rule and question for to deuine.

If ye wyll cause your felowe to beleue that ye shall diuine howe many peeces of syluer he hath in hys ryghte hand, say vnto him that he put as manye peeces in that one hand as in that other, & thē that he take 5 from the left hand to the right hande, & that he put forth

The Rules,

foorth of the ryght hande into the leaft hand as many peces as he hath remayning in the leaft hand. And there shall remayne 10 in the right hand.

The rule and question of three Sayntes.

A Hermit is entred wⁱⁿ a Church wherein ther be ; Saintes, that is to wit, S. Peter. S. Paule, and saint fraunces. This Hermit cometh fyrste to S. Peter & sayth to him in a maner of his oraisō : I pray thee that it please thee to double the siluer peces that I haue in my purs, and I shall geue thee 6, and so it was done. Then came he to S. Paule & said to him, if it please thee to double the peeces that I haue in my purs, and I shall geue thee 6, and so was it done. Then came he to Saynt fraunces and sayd : if it woulde please thee to double me the peeces þ I haue in my purs, I shall geue thee 6, and so was it done, & nothing had he remayning. I Demaund how many peeces of
spl

The Rules.

Syluer had he in his purs, Answer: He had 5 & 1 forth, & soz to know it Double them, & they be 10 and an halfe, & then ye must geue 6 to S. Peter, and there remayneth 4 & an halie, Double them and they be 9, and then geueth he 6 to S. Paule, and then there remayneth 1 Double them, and they be 6. and that 6 geueth he to S. Fraunces, & so he hath nothing remaynyng.

There folowech diuers other
proper rules and questions.

A Lord hired a seruaūt, the whych he
would geue euerye yeare 10 nobles
and a gowne, & the same seruaunt dwel-
leth 7 monethes wyth hym, and then
they vary, in so muche that hys Lorde
gaue hym licence to go his waye. And
sayd: go thy wayes out of my house &
take thy gowne wyth thee, and then I
am nothyng in thy det. Nowe I de-
maund what was the gowne worth.
wyl ye know þ: the marke how many
monethes 7 is lesse then a yeare, þ is 5
monethes

The Rules.

monethes les. And had the servant far-
ried so lōg yet by his maister, the ſould
be haue had the gowne and 10 nobles.
Therefore ſay thus: 5 monethes giueth
10 nobles, what giueth 7. make it after
þ rule of thze, & it cōmeth to 14 nobles

Of thzee felowes oz yong men.

Thzee felowes play together the one
to wyne the others money. For the one
had moze money then the other. And þ
firſt caſteth that the one of them 3 lea-
ſeth iuſt ſo muche money as the other 2
had. Then caſteth the ſecond & leaſeth
alſo as much as the other 2 had. Then
caſteth the thirde and leaſeth alſo iuſt as
much as the other 2 had. And the was
the money iuſt deuided, & had eche like
much. Now I demaund howe muche
had eche oz they began to play, & howe
much money that eche had when they
played. Wil ye knowe that, then marke
howe many perſons did playe, & adde 1
to them, as here adde 1 to 3 maketh 4.
ſo many nobles had þ firſt. Now Dou-
ble

The Rules.

ble 4 cometh 8, & subtra 1 from 8 rest 7
so many nobles had the second. Then
double 7 cometh 14, thereof subtra
rest 13, so manye nobles had the thyrd.

¶ An other question.

A man byeth 46. li. of saffron for 30.
pound, what shall cost 63. li. of saffron.
Wil ye know that, the multiply the 30.
poundes with the 63. l. of saffron, com-
meth to 1890. Nowe deuide them wyth

46 cometh 41. li. and $\frac{4}{46}$ part of a pound
to pay for the 63. li. of saffron. Now wil
ye know how many shyllinges that $\frac{4}{46}$
part of a li. is, than multiplie 4 by $\frac{4}{46}$
20, for 20 s. maketh a li. cometh 1. s. & $\frac{34}{46}$
part of a s. Now wyl ye know how
many pence that $\frac{34}{46}$ part of a shylling

is, the multiply $\frac{34}{46}$ with 12 pence, ma-
keth a s. cometh 408. Deuide them
wyth 46 cometh to 8 pence, and
 $\frac{40}{46}$ part of a peny. Nowe wyl ye knowe
 $\frac{40}{46}$ how many farthinges that $\frac{40}{46}$ part
of

The Rules

of a peny is, then multiply 40 with 4,
for 4 farthinges make a peny, cometh
160 farthings. Now deuide them with
49 cometh 3 farthinges and $\frac{22}{46}$ part of
a farthyng.

This done ye shall finde that 36. li. of saf
tron cost 41. li. 11. s. 8. farthynges and $\frac{22}{49}$
part of a farthing.

Item a 165 poundes of allome coste
2. poundes .5. Shyllinges 6 pence 9 far
thinges: what shall cost 22 poundes of
alome. If ye wyl soyle this question,
then make of your poundes Shyllinges
and adde thereto the odde 5 Shyllinges,
cometh to 45. s. Then make of the 45. s.
pence, and adde 6 pence, cometh to 546
d. then make of your pence farthinges
and adde thereto the 9 odde farthinges,
cometh to 2193 farthinges. Now mul
tiply the farthynges with 22, cometh
to 48246 farthinges. Nowe deuide
them wth 165, cometh to 592 & $\frac{66}{165}$ part
of a farthyng, for so manye farthynges
shall

The Rules.

shal cost 22. Li. of alome. Nowe wyl ye know how manye pence that the forewritten farthings make, then deuide them with 4, for 4 farthings make a peny. Then wyl ye know howe many shyllinges that they make, then deuide the pence wyth 12, for 12 pence maketh a shylling. Thus done ye shal find that 22. Li. of alome cost 6. S. 3. D. 1. farthing, and it is done.

In other question.

A Marchaunt hath bought a bag of pepper, I say not how heauy, but whē he geueth for a pounce of pepper 12. D. then remaineth him yet 37 pence. And when that he geueth for a poud of pepper 15. D. then he lacketh 44. D. to paye for the pepper. Now I Demaund how heauy the bag of pepper was, & howe much money the Marchaunt had. For to know this & suche other lyke questions, ye shal take and subtrah 12 from 15 & there resteth 3, whych 3 shall be your deuisor. Then shall ye adde 44 and 37
toget

The Rules

together, & that maketh 81. The must
ye deuide 81 with 2, & therof cometh 27
so many pound waiegh the bag of pep-
per. Now wil ye know how much mo-
ney the Marchaunt had, then must ye
multiply 12 wth 27, & adde 37 thereto, or
multiplie 15 wth 27, & subtra 44 cometh
361, so many pence had the Marchant.

¶ An other question.

A Dronkard Drinketh a baryl of beire
in the space of 14 Dayes, and when hys
wyfe Drinketh with him, the they Drink
it out wythin 10 Dayes. Nowe I de-
maunde in what space that hys wyfe
shoulde Drinke that baryl of beire alone.
For to soile this question & suche other
lyke, ye shal first subtrah the least Drin-
ker from the more, that is 10 from 14,
and there remaineth 4, & that is your
diuisor. Now saye: 4 geueth 10, what
giueth 14. make it after the goldē rule,
and ye shall finde that she shoulde
Drinke it in 35 Dayes.

¶ Here endeth the introduction of Al-
gorisme for the pen.

Here begyn-
neth the Introduction for to
learne to reckon with the counters,
with diuers rules belonging,
to the same.

C. thousand.

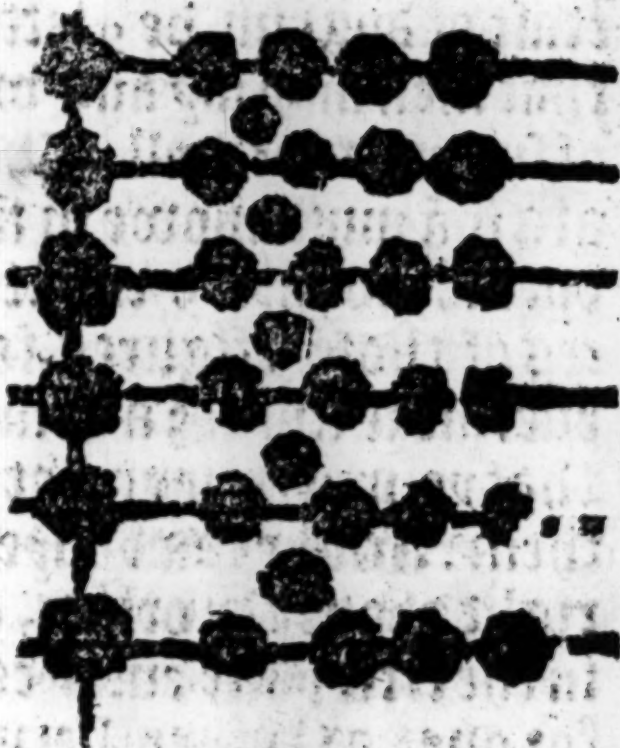
X. thousande.

Thousand.

Hundredeth.

Ten.

One.



If as much as there be ma-
ny persons that be vnlear-
ned, and can not wyte, yet
neuertheles the craft or sci-
ence of Abogryn & reckoning is nede-
full

M.i.

An introduction

ful for them to know, wherefore I shall hereafter declare & write of this science in the best & shortest wise that may be possible, howe that ye shall order your selfe in reckoning & to cast counters.

First ye shall vnderstand that in the craft of augrim be 9 letters or figures that men may lay and write all maner of summes withall. Therefore first of al a mā must knowe in this craft or science for to laye 9 counters in the places of those 9 figures, for they must lye euermore still for a remembraunce, so that ye may remember your place by them. And ye must laye them the one right aboue the other, that is to saye, in the first place every counter standeth for one, & the neathermost counter is the fyrst place. In the second place every counter standeth for 10. In the third place for a 100. In the fourth place for a thousande. In the fyfte place for 10 thousande. In the sixt place for a 100 thousande, In the seventh place for a myllion.

for the Counters.

myllion. In the eyght place for 10 myllions. In the ninth place for a hundreth myllions. In the tenth place for a thousand myllions, and so forth infinitely. And note well that euery counter that is layd betwene the lynnes, betokeneth euermore 5 times more then the counter that lyeth in the place next vnder him, that is to saye the first counter lying alone aboue the first place betokeneth 5, the counter lying alone betwene the seconde & the third yer and place, standeth for 50, aboue the third place 5 hundreth, aboue the fourth 5 thousand, aboue the fift place 50 thousand, aboue the sixt place 500 thousande, aboue the seuenth 5 myllions, aboue the eight 50 myllions, aboue the 9 place 500 myllions, aboue the tenth place 5000 myllions. But if ye wil the more surer knowe your places, it is necessarie for you to marke euery place with a marke, as to lay a counter or some other thing which shall ye styl, & in no wyse be remoued,

M.ii.

but

An introduction

but ye must take heede if ye laye counters for the marke of your places, that ye lay them not nye the counter that ye must worke with all, least that ye take the one for the other, but laye them as ye see them marked in the examples following. And whan ye haue layd markes, & knowe the order of your places, ye may adde & subtra, multiply and diuide what numbers ye lyst, that is to say, to cast & to abate at your pleasure.

Item whan there lye 2 counters betwene two liers, take them vp and lay 1 besyde the next lier aboue them. And when there lye 5 counters besyde anye lyer, take them vp and lay 1 in the next space aboue them.

Of Addition.

Addition is none other thing but to set together 2 or 3 numbers & to make of them a totall sum, as in the example following.

There is a man which oweth 20. li.
is pound

for the Counters.

is pound, 100. pound, 50 pound, and 69
pounde. Nowe if ye wyll knowe howe
much that al these summes maketh to
gether. Then for the first sum ye must
lay 2 counters besyde the seconde lye,
for they 2 stande for 20, that is for the
fyrst summe. Nowe for the second sum
lay 1 counter besyde the second lye, for
that is 10, and laye 1 counter betwixt
the neathermost & the second lye, for
that 1 standeth for 5, and then lay thre
counters besyde the neathermost lye,
and they altogether make 18. Now for
the thirde sum ye shall lay 1 counter be
side the thirde lye, for that is an 100.
For the fourth summe lay 1 counter be
syde the thirde and the second lye, that
is 50. Now for the fyft summe lay one
counter betwixt the thirde and the se
cond, and 1 besyde the second lye, and
1 betwene the second and the neather
most, and 4 besyde the neathermost
lye. and that maketh together 69, and
in so doyng ye shall fynde that all the

An introduction

foze wytten summes make together 247, as ye shall see in the figure folowing. And euerinoze for a generall rule remember your places, for every counter that lyeth besyde the first lper, standeth but for 1, in the seconde place euery counter standeth for 10, in the third place for 100, as is before rehearsed.



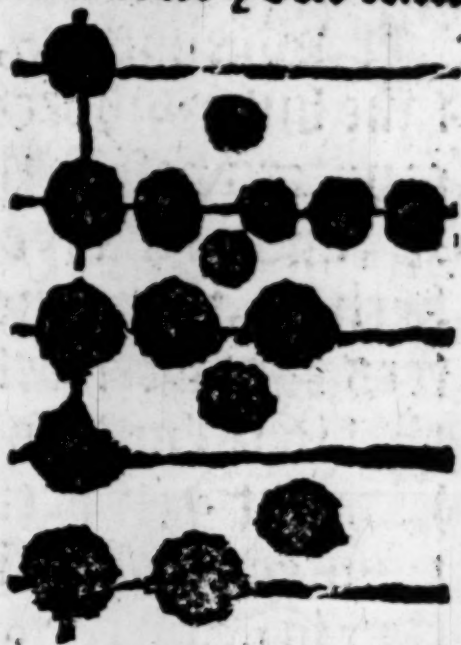
Wyll ye prooue whether ye haue added well oz not, than subtragh all your sumes one after an other And in likewise as ye do with this example, so ye shall do with all other of addition.

Of Subtraction.

Subtraction is, if ye wyll wythdraw any summe from an other sum, ye must know 2 numbers that is to wit, the number that ye will withdraw, and the number wherfro ye wil withdraw. An example. There is a mā that oweth you 9756 pounds;
and

for the Counters.

And thereof he hath payed you 5989 poundes. Now if ye wyll know what ther resteth, then set downe your sum that he ought you, & thereof withdrowe þat sum that he hath payed you, & that þat remaineth is the sum that hee doth yet owe you, as ye moze plainlye maye see in the example hereafter folowing.



And when ye haue set your debt, that is to say 9756 poundes vnder this maner, as before is shewed. The if ye will know the rest, then take thereof that ye haue payed as 5989 pounds. Now for to do this, ye shall first take vp þat counter that lyeth betwene the fourth & fift lyer, for that is 5000. Then take vp 1 of the counters whiche lyeth besyde the fourth lyer, & that is 1000, & ye should take awai but 600 therfore ye must lay

M.iiii.

downe

An introduction

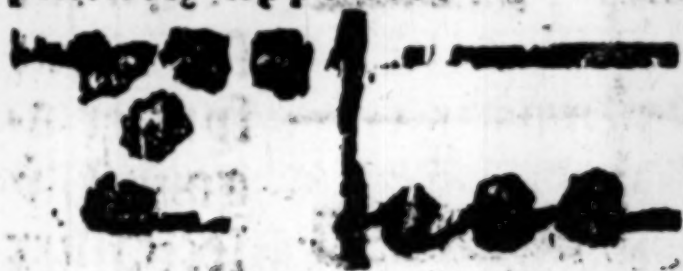
Down 1 counter againe beside the third
lyer, that is 100. Then take vp one of
the counters that lieth besyde the third
lyer, which is 100, from which ye shuld
take but 80, therefore ye must lay two
counters besyde the second lier, that is
20, and 80 that ye haue taken vp ma-
keth 100, then take vp one of the coun-
ters that lyeth besyde the second lyer,
that is 10, and ye shuld haue taken a-
way but 9, therefore ye must laye one
counter besyde the neathermost lyer,
that is 1, and the 9, that ye haue subtra-
hed or taken vp, maketh 10, and there
remayneth 3767 pounde Dette, and
they stand thus.



Wyll you proue whither,
ye haue subtrahed well
or not, then adde there-
to that ye haue payd,
and if the summe come
then so great as it was
afoze, then is your sub-
traction true, els not.

Of Multiplication,

Multiplicatio is nothing els but to multiplie one number by another, as thus, to knowe what is 6 tymes 9, or 6 tymes 12 and suche lyke. And in multiplication ye muste consider two numbers, that is to wote the number that ye wyl multiply, and the number whereby ye wyl multiply, and ye must worke in multiplication after this maner. Fyyste ye shall laye downe the lesser number, which is 6, and this 6 is the number that shall be multiplied, & the 9 is the number that ye shall multiplie withall. And ye shall lay the number that shall be multiplied at the right syde of your lyers, & when ye worke your multiplication, ye shall laye them at the least syde, as in thys example hereafter folowing shall moze plainly appeare.

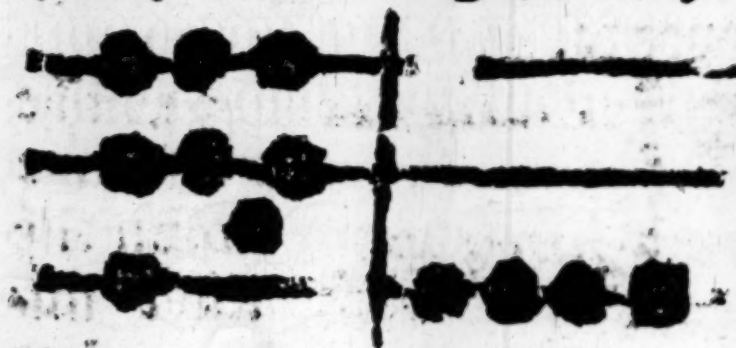


Fyist ye
must laye
downe the
lesser nū-
ber

An introduction

ber, which is 4, as in this example ye see them layd here on the ryght hande of the lynes. And when that ye haue thus done, ye must take vp one counter and laye 9 for it on the other syde of the markes, that is to wyte, at the least syde. And after that take vp an other counter, and laye also 9 for it, and so forth for euery counter that ye take vp ye must laye 9 for it at the other syde. And when that ye haue so wroughte your worke, it wyll come iust to 36, as ye see the counters befoze layde on the least hand of the lynes.

And if ye wyll multiplie by greater numbers, as thus, to know what is 24 times 14. First laye 14 on the ryght hand of your lynes, or markers, as this example folowing sheweth.



And the
set your
fynger a
gaynst y
secōd lier
and

for the Counters;

and that finger so set, doth dampne all the places vnderneath as though that were the first place, & than take vp the counter þ lyeth in the place wher your finger is, & now reckon þ second place to be your first place, & then lay 24 on the least hand of your marke, as the example sheweth. After that don take away your finger, & then take vp 1 of the 4 counters, & for him lay 24 on þ least syde, as ye did before, & so for every counter that ye so take vp lay 24, & it shall come to 336 as the example before sheweth, and then ye haue the effect of your question, that in 24 tymes 14 make iust 336. Furthermoze if there happen anye counter lye betwene the places, as 5, or 50, or 500, or such other, then ye must take heede howe ye reckon in the multipliynge, as thus: if ye woulde knowe what is 8 tymes 16, firste laye 8 on the ryght hand of your lvers, as ye dyd before, then set your synger at the counter that lyeth alone aboue the first

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first place whych
was layd for 5, &
then reckon that
place to be the first
place, and then
recken the space

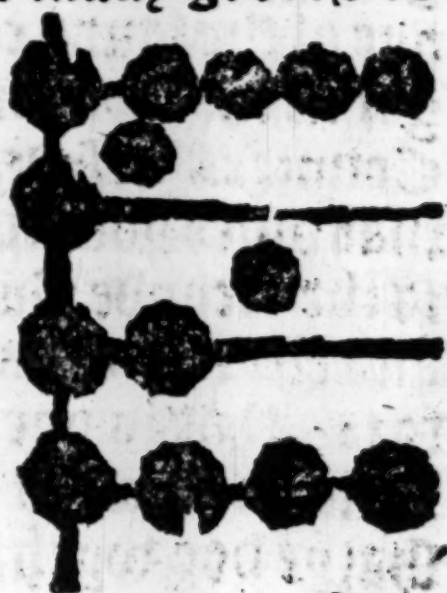
that is betwene the seconde place, and
the third place, to be your second place,
so that ye must reckon hym 10 from the
place where your finger is, but this ye
must especially take hede of, that ye rec-
ken the place next aboue your finger to
double the place where your finger is.
For if ye take heede ye shall evidentlye
see it by reason, for 2 tymes 5 maketh
10, & 10 tymes 5 maketh 50. The to pro-
cede in your question, ye must woork
it after this maner: take vp your coun-
ter at your finger, and lay for it on the
right side of your markes 16, after that
maner laye a counter in the space next
aboue your finger, and reckon hym for
10, and then lay 3 counters in the place
next aboue your finger, & reckon every
chone

for the Counters.

chone of them for 2, which maketh iust 6, then 10 and 6 maketh iust 16, as the figure before shewed. When ye haue so done, then take awaye your synger, and for euerye one of the 3 counters that lieth in the fyrst place on the right syde, laye 16 on the leaft syde, and then take them of the right syde away, & ye shal see that the number shall come iust to 128, as the example before shewed. And this wise ye must reckon all counters that lyeth in the spaces, if the multiplication shal be truly made.

¶ An other example.

For to knowe howe many grotes be in 4 5 6 3 nobles. fyrste ye shall set down the lesse number, that is the number that ye shall multiply, as thys figure folowynge plainly here sheweth.



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An introduction.

Nowe for to make of theese nobles grotes, ye must multiply them with 20, for 20 grotes make a noble. Nowe for to multiply this number euermore, ye must lay down the number that ye wil multiply at y^e right side of your marks, and set your finger agaynst the marke that ye begyn at, for your finger shalbe a remembraunce to you, for that place where your synger standeth, is the first place, and dammeth all the places vnderneath hym.

Nowe for to make groates of these 4563 nobles. First ye shall set your synger agaynst the fourth lyer, & take vp one of the foure counters that lyeth agaynst the sayd fourth lier, and lay two Counters besyde the nexte lyer aboue that wher your finger stādeth, for that is the seconde place from your synger, and the two counters so laide, standeth for 20, that is one noble, and like as ye haue Done wyth thys one counter, so shal ye doo wyth the other, folowing.

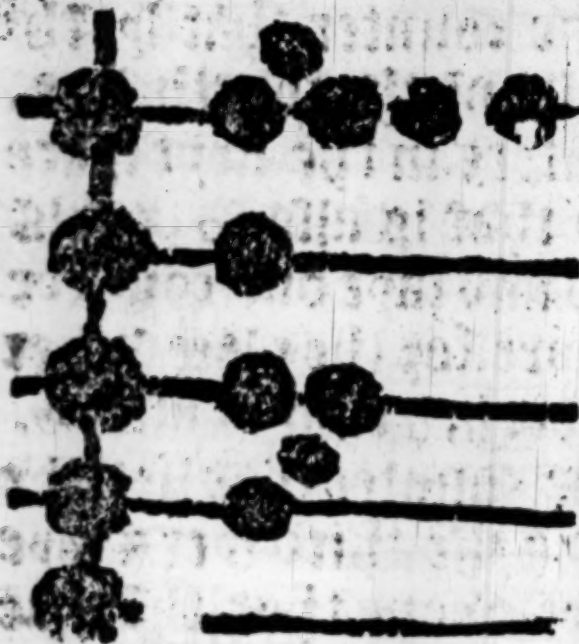
Then

for the Counters.

Then take vp the counter that lyeth betwene the third and the fourth lye, and lay two counters in the next space aboue that, and that is also 20, or els ye may take it vp and laye one counter beside the second lye, for the place wher your finger standeth, & that is also 20.

Then take vp the counter that lieth betwixt the second & the third lye & laye 2 in the next space aboue that, the take vp the counter that lyeth besyde the second lye, & laye 2 counters besyde the next lye aboue that same. Then set your finger agaynst the fyrst lye, and take vp one of the 3 counters, and laye 2 counters for it beside the next lye, aboue that, & as ye haue don with that, so must ye do with the 2, and then ye shall fynde that 4 5 6 3 mobles maketh 91260 grotes, and standeth thus, as the example hereafter sheweth. And as ye haue done with these forerewritten examples of multiplication, so shall ye do with al other of multiplication.

An introduction.



Wyl ye know
or proue why
ther you haue
multiplied wel
or not, then de
uide þ grotes,
that is 91260.
by 20, & if the
summe come to
stād as it was

before, then haue ye multiplied well.
And thus alwaye ye maye make your
prose vpon all maner of multiplyca
tours.

Of Diuision.

Diuision is to deuide a summe
thorowe an other summe, and
in this diuision must be know
en two numbers, that is the number
that ye wyl deuide, and the number
wherby ye wyl deuide it, as to know
how many tymes ye may haue a small
number out of a groat, as by example.

If

for the Counters.

If ye wyl deuyde. 336, by 14 as in this ensample hereafter. First laye 336 on the ryght hand of your lvers, and then set your finger at the hiest place where any counter lieth, for as I shewed you before that dammeth all the other places beneth, so that then there as your synger is, is the first place. And then loke if ye may rake 14 from that place, which ye can not do, for every counter standeth but for one because your synger is there, therefore ye must remoue your synger to the next place beneath wher the other 3 counters lye, and then loke if ye may take 14 from that place which ye may do ryght well, for these 3 counters at your synger standeth but for 3, and the other 3 counters aboue standeth for 10, and then se how many tyines 14 ye may haue out of 33, and so many counters ye must laye on the other syde iust agaynste your synger, & is to saye, ye maye haue 28 out of 33, that is two tyines 14 out of 33, & there-

A.i.

fore

An introduction

foze ye must take bp 28, and lay 2 counters on the other syde against your finger, & then

ye can haue

14 no moze,

thē ye must

remooue

your finger



to the next place beneath, & then rec-

ken that place at your finger to be the

first place, as ye did befoze, & then loke

how many times ye may haue 14 frō

that place, whyche ye cannot, for that

counter at your finger stādeth but for

1, & the other in the space aboue stan-

deth but for 10, whych is in all but 11,

therefoze ye must remoue your finger

to the next place beneath, and then ye

shall see that that number is 56, out of

56 which ye may well take out 4 tymes

14, which maketh iust 56, therfoze ye

must take bp 56 and lay 4 counters on

the other side against your finger, and

then take away your finger, & ye shall

see

for the Counters,

see that that number that ye haue layd on y^e least side of your markes cometh iust to 24, as the example befoze shew^ed, and the ye haue your question solved. For if ye deuide 336 by 14, it cometh iust to 24, for 24 tymes 14, maketh iust 336, as I haue shewed you befoze in the rule of multiplication. And likewise as ye haue deuided this number ye may do with all other numbers. And if ye wyl proue whither ye haue well deuided or not, take the number that cometh of your diuision, & multiply it with the final number, & is your diuisor, & adde that remaineth thereto if there be any, & then it will come iust to the great number that was the number to be deuided. And lyke wyse if ye wyl proue whither ye haue truly multiplied or no, take the great number that cometh of your multiplication, and deuide him by the number that is to be multiplied, and it will come iust to the third number that was your multiplier.

¶ ii.

If

An introduction

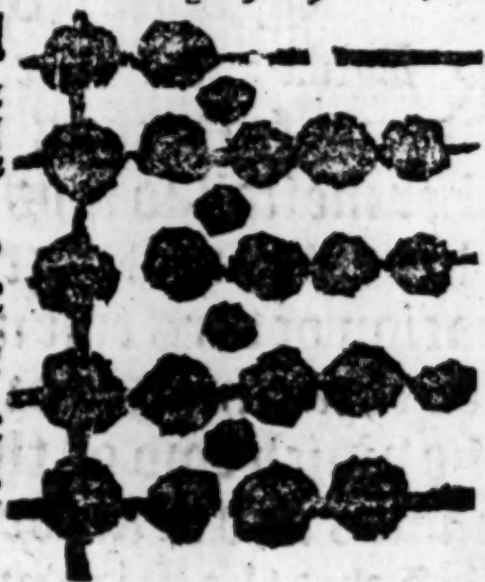


If you desire to know how many grotes be in 79992 pence. First ye shall set down your pence as ye see in thys figure here, & ye shall deuide them wyth 4, for 4.d. maketh a grote. Now to the

operation therof, when that ye haue set downe your pence, as the figure aboue sheweth, then set your finger at the hiest counter, & see if ye maye haue 4 from that place, which ye cannot for ther lyeth but one, and it standeth but for one, because your synger standeth there, therefore ye shall remoue your finger, and set it against the fyft lye, & see if ye may take away 4, the which ye may do, for ther lieth 7. Now your finger standeth agaynst the fyft lye, therefore ye shall take vp the counter that lyeth in the next space aboue your finger.

for the Counters.

finger, for that counter is 5, & ye should take vp but 4, therefore ye shall take it vp and lay it beside the fift lper of the right side, and lay one on the least syde also beside the fift lper, then see if you can haue 4 any more from that place, the which ye cannot, therfore remoue your finger, & set it agaynst the fourth lper, and then see how many tymes 4 ye may haue out of 36, ye may haue 9 tymes 4, and for this 9 tymes 4 ye shall laye one counter in the space betwene the fourth and fift lpers, and 4 besyde the fourthe lper, and that maketh 6. And as you haue done wyth these, so shall ye doo with all other folowynge, & when ye haue finished your woork, you shall fynde the 79992 pence make 19998 grotes, as ye may se plainly here in this figure.



R.iii.

¶ The

Certayne rules.

The prooffe.

If ye wyl proue whither ye haue deu-
uided well or not, then multiplie the
grotes with 4, for 4. d. maketh a grof
and if the sum come to stand as it dyd
befoze, then ye haue deuided wel.

Item when ye haue any sum with
pence, if there remaineth any thing, it
is pence. And if ye deuide by shillings,
if there remaineth any thing it is shil-
lings. And as ye haue don with these
foze wozytten examples, so maye ye doo
with all other.

The golden rule.

Regula aurea is called the Golden
rule, for lyke as gold passeth all o-
ther mettall, so thys rule passeth all o-
ther rules in Arithmetick. And to the ope-
ration of thys rule must alwaies be no-
ted thzee thinges or thzee numbers, of
the which two of them must be lyke of
names and of kinde, that is to wit, the
first and the third number, & alwayes
ye

Certayne rules.

ye shall multiplie the seconde number with the third, & that that cometh of the multiplicatiō is the number to be deuided by the fyrst number that is general diuisor, and the quotient of the diuisor sheweth a number of solucion of name and kinde of the middle numbers, as in these examples folowynge shall appeare.

If a man buyeth 40 egges for 20. s. how many for 12 pence? If ye wil soile this question, ye must multiply the second and the thirde number together, and the product or the summe that cometh of that multiplication, ye shall deuide by the firste number, lyke as here is shewed in this example. When ye bye 40 egges for 20 pence, what shall one pay for 12 egges? Ye shall multiply 20 with 12, cometh to 240, the whych ye shall deuide with 40, cometh to 6 pence, and so much shall ye paye for the 12 egges. And thus ye may do with all other suche questions.

Certayne rules.

An other question.

Item a ¹⁰⁰ apples cost 12 pence, what
 shall one pay 102 87? We shall multiplie
 12 with 87, cometh 1044, the which
 ye shall deuide with a ¹⁰⁰, cometh 10
 pence 44 part of a d. for the 87 apples.

¹⁰⁰
 Wyl ye know how manye farthinges
 that the 44 hundreth part of a peny is
 worth, then multiply 44 was many
 farthinges as a peny is worth, that is
 4 cometh 176, the which ye shall deuide
 with a ¹⁰⁰ cometh 1 farthing, and ⁶⁷
 part of a farthing. ¹⁰⁰

Item 165 pound of ware cost 2. li. 5. s.
 6 d. 9 mites, what shall cost 22. li. For
 to soile this question and suche other
 lyke: Firste ye must make of poundes,
 shillings, and adde thereto the odde 3
 s. the which stande in this question, &
 they come together to 45 s. then make
 of the shillings pence, and adde there
 to the odde 6 pence that standeth in the
 question, cometh to 546 d. then make
 of

Certayne rules.

of the pence mites, and 24 mites is a
peny, & there to adde the odde 9 mites
that standeth in the question, cometh
together to 13113 mytes, and that is the
total summe of all the poundes, shyl-
linges, pence, & mites together. Nowe
make it after the rule & say: 165 pounde
of waxe cost 13113 mites, what shall cost
22 pound. First multiplie the myddle
most and the last together, that is: ye
shall multiply the mites with the last,
¶ is with 22, & it shall come to 288486,
deuide them with 165, and it shall come
to 1748 mites, and $\frac{66}{165}$ part of a myte,

so manye mites shall the 22 pounde of
waxe cost. Now wil ye know how ma-
nye pence that the forewrytten mytes
make, then deuide them with 24, for
24 mites maketh 1 penny. Then wil ye
know how manye shillinges that the
pence make, then deuide them with 12
for 12. d. maketh a s. And thus doyng
ye shall fynde that the 22. li. of waxe
shall

Certayne rules.

What cost 6 shepynges, 20 mytes and $\frac{68}{165}$ part of 1 myte, and it is Done.

Item when ther stādeth 1 in the first place. As 1 goole cost 3. d. what shall cost 28. Ye shall multiply $\frac{1}{3}$ middlemost wth the last, in saying: 3 times 28 is 84, so many pēce cost 28 geese, & it is finished

Item in the contrary, as when that 1 cometh in $\frac{1}{2}$ latter end, as here in this example 20 capons cost 23 pence, what shall cost 1 capon. For to soyle this question ye shall deuide the middlemost wth the first, $\frac{1}{2}$ is 23 with 20 cometh 1. d. & $\frac{3}{10}$ part of a peny, that is 10 mites & $\frac{4}{5}$ part of 1 mite for 1 capon.

Item 17 elles & $\frac{1}{3}$ cost 14 nobles & $\frac{2}{3}$ part of a noble, , $\frac{2}{3}$ what shall cost 32 els & $\frac{1}{2}$ part. For to soyle this question and $\frac{1}{4}$ suche lyke, fyrst ye must breake the fyrste & last broken together crossewise in saying: 1 times 4 is 4, set the 4 by 17 elles. Then say: 3 times 2 is 6, set the 6 by the 32 elles. The multiply both the numbers of your fractions together

Certayne rules.

gether, in saying 4 tyimes 2 is 8, the
 which ye shal set vnder 4 and 6 then it
 standeth thus, as in the rule of thzee, if
 17 els & $\frac{4}{8}$ part of an elle cost 14 no-
 bles, $\frac{1}{8}$ and $\frac{1}{8}$ parte of a noble,
 what shal cost 32 $\frac{5}{8}$ els, & $\frac{6}{8}$ part of
 an elle. fyyst multiply the $\frac{8}{8}$ first hol
 number with the neathermost of hys
 broken, that is 17 with 8 cometh 136, &
 therto ye shal adde the 4 that standeth
 aboue 8 cometh 140, the which ye shal
 multiply with the 3 that standeth vnder
 the second broke, cometh 420, that
 is your deuisor, then multiply 14 with
 the 3 that standeth vnder 1, & adde that
 therto cometh 43, that is your multi-
 plicatour, then multiplie 32 wyth the
 neathermost figure of his broken, that
 is with 8, and adde thereto the same 6
 that standeth aboue the same 8 cometh
 262. Now set it in y rule of thzee in say-
 ing, 420 els cost 43 nobles, what shal
 cost 262. multiply y second w the third
 and then deuide that y cometh of that
 multi-

Certayne rules.

multiplication with the firste, and ye
shal finde that the 32 elles of cloth cost
 29 nobles $19.0.34$ mites, and $\frac{130}{420}$ part
of a myte.

Item when that there standeth at
the beginning a whole number with a
broken, and in the second & thirde place
no broken, as here: 36 elles, and $\frac{1}{2}$ cost
 8.11 , what shal cost 16 eles.

For to soyle this questiō, ye must mul-
tiply the first whole number wyth the
vndermost figure of his broken, that
is 36 with 2 , and adde the 1 therto that
standeth aboue 2 comning 73 , & that
is your diuisor, then multiply 8.11 also
with the vndermost figure of the bro-
ken that is to wit with 2 , & it cometh
to 16 , then multiply 16 with 16 , cometh
 259 , the which ye shal deuide with 37 , &
it wil shew you that ther shalbe to pay
for the foresayde cloth 3 pound, 10 shyl-
linges, one peny, 17 mytes, and $\frac{33}{73}$ part
of a mite.

Item whē there standeth in the first

Certayne rules.

or in the second no broken number, but in the latter end a whole nūber with a broken, as here 14 ounces of grain cost 14.8. what for 9 ounces of grayne and one thirde. For to knowe this ye shall multiply the first 14 with 3 that standeth vnder the broken, cometh to 42 that is your diuisor, then multiplie 9 wth 3, and adde that 1 thereto that standeth aboue 3, cometh to 28, then set it thus 42 geueth 14, what giueth 28. Make it forth after the rule, and ye shall finde that there is to paye 9 shyl^l ynges 4 pence for the 8 ounces of grain and one thirde part.

Item when that ye finde neyther at the beginning nor at the latter end no broken number, but in the myddest a whole with a broken as here. A man bought 48 sheepe for 64 crownes & $\frac{2}{4}$ what shall one paye for 18 sheepe. 4
For to soyle this question ye must multiply 48 with 4, which cometh to 192 that is your diuisor, then multiply 64 wth

Certayne rules.

wyth 4, and adde thereto the 2 that standeth aboue 4, cometh to 258, the which ye shal multipli with 18 cometh to 4644, the which ye shal deuide wth 102. And thus ye shal fynde that ye must pay for the 18 sheepe 24 crownes, 4 styuers and 36 mites barbang.

Item when ye finde no broken at the beginning, but in the second and third one whole with a broken. As 7 els for 6 pound 1 what shal cost 16 els and 1

For to soyle this question ye must mul⁴tiply the two vndermost broken num⁵bers together, in saying: 3 tymes 4 is 12, the which ye shal multiply wyth 7, cometh to 84 that is the diuisor. The multiply eche with his broken cometh 25 & 49 the which ye shal multiply one with the other, cometh 1225, the whych ye shal deuide with 84, & the solucion shalbe to pay 14. li. 12. s. 18. d.

When that ye finde at the beginning & the myddest a hole with a broken, & at

Certayne rukes.

at the latter end standing a hole wythout a broken, and 9 elles and $\frac{5}{8}$ for 5. li.

$\frac{5}{8}$ what shall cost 15 elles, multiplie ⁴ 9 wyth 4, & adde therto 3 cometh 59, the whych ye shall multiply with 8 cometh 312, that is your diuisor, then multiply 5 with 8, & adde therto the 5 that standeth aboue 8, cometh 45, the whych ye shall multiply with 4 that standeth vnder the first broken, cometh 180. Now set it in the rule of thre in saying: 312 geueth 180, what geueth 15, make it after the rule, and it cometh to 8. li. 13. s. 22 mites, and $\frac{19}{2}$ of a myte.

57

The rule of company

There be 3 marchauntes or companions, the which lay together their money in marchaundise, & ech to wynn after his inlaying. The first laid in 170 crownes, the second 60 crownes, & thirde 40 crownes, & with it they haue won 50 crownes & al costes, I aske how much that

Certayne rules.

that eche shall haue after his laying.
Nowe for to solve this question and al
such other rules of companye, ye must
make of their money that they haue
layd in a total summe, comyneth to 250
nowe say 250 geueth 50, what geueth
150, make it after the rule of thzee, and
it comyneth to the first mā 30 crownes
wounning. Now for to know what the
second hath wounne, ye shall say: 250 ge
ueth 50, what geueth 60, make it after
the rule and ye shall fynde that the se
cond hath wonne 12 crownes. Wyl ye
know what the thirde hath, the say 250
geueth 50, what geueth 40, make it af
ter the rule, and ye shall finde that the
thirde hath won 8 crownes. And thus
shall ye do w al other rules of company

The rule of company with tyme.

Three fellows put marchaundise
together, whercof the first layeth
in 50 crownes for 4 monethes. The
second

Certayne rules.

secōd 80 crownes for 2 monethes. The third 100 crownes for 5 monethes, and withal this money they haue wonne 6 crownes besyde their costs paid. Now I Demaunde what eche hath wonne with his money. For to know this, ye must multiply eche mans money with his time, that is for the first 50 with 4 cometh 200 set that as though he hath layde in so much, For the seconde multiplye 80 with 2 cometh 160 set that also as though he had layd in so much. Now adde the 3 numbers together, & then make it after the rule of company and then shall ye finde what eche hath wonne with his company.

¶ The rule of batering.

Two marchant men wyll chaunge their wares together, and the one hath a fine black cloth the which is 43 elles long, and he wyll geue the elle no lesse then 18 pence. The other Marchaunt hath pepper, and he wil sel the pounce no lesse then 13. d. Nowe I Demaunde

Q.i.

how

Certayne rules.

how many pounce of pepper the fyrste
marchaunt shall haue for his 43 els of
cloth. For to soyle this question ye shall
say 13 geueth 43, what giueth 18, make
it after the rule of 3 & ye shall finde that
the first shall haue for his cloth 59 pound
of pepper, 8 ounces, 12 englishe and $\frac{4}{13}$
part of an englysh.

Of a Matte.

A Matte runneth in the fielde & ouer
runneth in one minute (there be 60 in
an houre) 12 rodde of ground. And a
Grayhound being her enemy, foloweth
her, and ouer runneth in one minute 15
rodde of ground. But or the Gray
hounde began to runne, the Hare had
run 200 rodde of land. Nowe is to be
Demaunded in how many minutes &
howe many rodde of lande was the
Hare taken. For to soyle this question
and such like, ye shall subtragh the lesse
running out of the more, that is 12 out
of 15, and there remaineth 3, and there
with ye shall deuide the space that the
Hare

'Certayne rules.

Hare hath run befoze the Grayhounde began to run, that is 20 rodde. And in so doyng ye shal finde that the Grayhound overtoke the Hare in the 66 minutes, and $\frac{2}{3}$ partes of a minute, that

is one houre and 6 minutes, and $\frac{2}{3}$ of a minute. Wyl ye know how manye rodde that the Grayhounde dyd run or that he tooke the Hare, then multiply 66 and $\frac{2}{3}$ wyth 15, cometh to $\frac{3000}{3}$

the which ye shal deuide with 3, cometh 1000 whole, so manye rodde dyd the hound run or that he tooke the Hare.

¶ The rule of 2 fellowes.

Two fellowes went together oute of a towne, and the one goeth euery day 12 myles, & the other goeth the first day but one myle, & the second day 2 myles, the third day 3 myles, and so forth euery day one myle more. Now I demaunde in howe manye dayes, & how many myles went he or that he

Q.ii.

ouer

Certayne rules.

ouertooke his felow. For to soyle this question, ye shall double the myles of him that went euery Daye lyke muche, that is 12, and 2 tymes 12 is 24, thereof ye shall subtra the one myle that the o^rther goeth the first Daye, and there resteth 23, vpon the same Daye was the first man ouertaken of his companton. Wyl ye know in how many myle, then multiply 23 with 12 cometh 276, for so mani miles w^et he o^r he ouertoke him

Item there is a fellowe gone out of London towarde Salisburpe, and he goeth euery Day 8 myles, and another felow cometh from Salisburpe toward London, and goeth euerye Daye but 6 myle. Now I deimaund in howe many daies shal they two mete. Now for to soyle this question and suche o^rther lyke: First ye must adde together the number of the myles that they go both in one Day, that is 8 & 6 maketh 14, therewith deuide the length from the one towne to the other, that is 60 myles,

Certayne rules.

myles, and in this doing ye shall fynde
that they go 4 Dayes and $\frac{4}{9}$ part of a
Daye or they meete.

A Lord had hyred a workeman, the
which he gaue every day whan that he
wrought 5 grotes, and when that he
plaieth he spendeth every day 4 grotes,
and when that it came to the ende of a
100 Dayes, the Lord, and the workeman
reckned together, for the workeman
had yet receyued no money of the
Lord, and when they had reckoned,
they came iust out, for the workeman
had spent as much as he had wonne.
Now I demaund howe manye dayes
went he playing, and how many daies
dyd he worke in that 100 daies. For to
sople this question, ye must adde toge-
ther bothe the summes of money, that
is 5 grotes and 4 grotes, cometh to
9 grotes, that is your diuisor. Now for
to know how many dayes that he had
wrought, saye thus: 9 geueth me 4,
what geueth me 100, make it after the
D.iii. rule

Certayne rules:

rule of thre, & ye shal finde that he had
wrought 44 Dayes and $\frac{4}{9}$ of a Daye.

Now wil ye know how manye Dayes
that hee playeth, then saye 9 geueth 5,
what giueth 100, make it after the rule
& it cometh 55 Dayes and $\frac{4}{9}$ of a Day.

Of a man that lay in his Death bed.

Item a man that laye in his Death
bed, called his childzen to him and said
vnto his eldest sonne, go to the chaun-
ger where my mony standeth, and tell
hym that he giue you money 1 pounde
and of that $\frac{1}{10}$ remayneth yet the tenth
part. The he saith to his second sonne
go to the chaunger as your brother did
and tel him that he geue you 2 pound,
& of that that remaineth yet the tenth
part. And to the other he said that they
should do as their brothers had done,
but euer the one should bring a pound
more then the other, And he sayde to
the

Certayne rules.

the yongest that he should go and fetch all the money that hys brothers hath left there. And when thys is done eche chyld broughte lyke muche money home. Now I demaund how manye chylzen were there, and how muche mony that eche child brought from the chaunger, and how muche mony was at the chaungers. Wyl ye knowe this, then subtrah the teller that standeth in the broken nomber, that is 1 from 10 rest 9, for so manye chylzen hadde the same man. And so many poundes starlynge dyd every chyld fetch from the chaunger. Now wil ye knowe how muche money that there was at the chaunger, then multiply 9 with 9 cometh 81 so manye poundes starlynge was at the chaungers.

A goldsmith hath a peece of 15 ounces and in the same peece is 6 ounces of gold, 5 ounces of syluer, and 4 ounces of copper. To thys goldsmith cometh a man or a woman y^e which wyll

D.iiii.

haue

Certayne rules.

haue made of thys peece a kettell of 9 ounces. Now I Demaund how much gold and syluer and copper shall be in this kettel. If ye will soyle this question, then say 15 geueth 9, what geueth 5 ounces, make it after the rule of thye and it commeth 3 ounces of gold and $\frac{2}{5}$ part of an ounce. Wyl ye know how much siluer, then say: 15 geueth 9 what geueth 5 ounces, make it after the rule and it commeth to 3 ounces of syluer. Now wil ye know how much copper, then say 15 ounces geueth 9, what geueth 4, make it after the rule and it cometh 2 ounces $\frac{3}{5}$ part of an ounce, & it is done.

A man hath a golden crowne of 34 styuers, and a Phillippes gulden of 25 styuers, and a Ducate of 28 styuers, and with this money he goeth to the chaunger, and wyl haue for it negenmanne kings crownes of 6 mites. Now I Demaund how much that he shall receiue of ech for þ aforesayd gold, and receiue
of

Certayne rules.

of eche lyke much. For to soyle this question and such lyke, then make of al the great mony that he wil chaunge mytes for that is the least coyne that he wyll haue, and cometh to 9072 mites, then looke howe manye mites that all the smal pence be woorth, that he will haue, that is 25. Now deuide the great sum of the mites, that is to w^yt 9072 with 25, and ye shall finde that he must haue of eche 362, and $\frac{22}{25}$ and it is done.

Of 4 Carpenters.

Four carpenters will make a house whereof the first taketh vpon him to make it himselfe alone in a yeaere. The second will make it in two yeaeres. The third will make it in 3 yeaeres. And the fourth in 4 yeaeres. Now I Demaund if al these 4 wrought vpon that house, in what space would thei 4 make that house. Wyl ye know that, then say: the first woulde make it in one yeaere, that were 12 tymes in 12 yeaere. The second
in

Certayne rules.

in 2 yeaere, that wer 9 tymes in 12 yere.
The thirde in thre yeaere, that were 4
tymes in 12 yeaere. And the fourthe in
foure yeaere that were thre tymes in 12
yeaere. Now summe them all together,
that is 12.6.4.3. cometh to 25, there
with deuide 12 cometh $\frac{12}{25}$ part of a yere.

Now if ye wil know how many daies
that it is, then multiply 12 with 365 for
so many daies be in a yeaere, and that
that cometh of that multiplicacion de
uide it by 25 cometh to 175 daies & $\frac{5}{25}$
part of a day.

The rule of false positions
by the which all maner of difficult
and hard questions may easily
be dissolued & first of one
false position.

Now shall ye know how by false
positions or coniectures one or
twoo ye shal fynde out the very
truth of that the whyche ye seeke for,
and fyrste ye shall vnderstande howe
to

Certayne rules.

to fynde the truth of a question p^{re}posed by one coniecture or polys^{ty}on.

When that anye question is put forth vnto you to be assayed, of the whych one parte is knowen and the other vnknowen. Answer to that question by and by, with your selfe at all auenture, and then consider with your selfe whether ye haue made ryghte answer or no, yf not, loke what proportion is betwene your coniecture and that $\frac{1}{2}$ foloweth of your coniecture, and the same proportion is betwene the thing knowen and $\frac{1}{2}$ pertaineth vnto $\frac{1}{2}$ selfe thing beyng yet vnknowen. As by ex^{am}ple ye shall moze playnly perceaue.

A certayne wayfarynge man coming by the way, found so many crownes, that the seconde, the thyrde, and the fourth part of the added together made 50. I demaund what summe he found. To make answer to thys question by one position, ymagyne some summe that hath these parts in it, $\frac{1}{2}$ is to

Certayne rules.

In say, a seconde, a thirde, and a fourth part: and be it 12, whose second part or halfe is 6, the thirde part 4, the fourth part 3, which all added together 6.4.3. make 13, but the summe that he found, the seconde, thirde and the fourth of it made 50, wherefore 12 is not the sum he found, therfore this position is false and yet by thys false shall ye come to the lyghte of truth, by the helpe of the rule of thzee. For looke what propozcion is betwene the second, the thyrde, & the fourthe parte of 12 added together, the whyche maketh 13, and 12 whose partes there be, the same propozcion is betwene 50, which is the second, the thirde and the fourth part added together of the number vnknowē, and the same vnknownen number it self. Then say thus with thy selfe: if 13 which containeth the foresayde partes in them, come of 12, of whom come 50, then set them thus: 13.12.50. then by the rule of thzee multiplie 50 by 12, and thereof com

Certayne rules.

commeth 600, Deuide the same by the
first number 13, and in the quocient,
thou shalt finde $44\frac{2}{13}$ the whych was

the summe of the crownes the whych
the man founde: of the whych summe
the halfe part is $23\frac{1}{13}$ the third part is

$15\frac{1}{13}$ the fourthe parte $11\frac{7}{13}$ the whiche
partes added together make iuste 50.
Thus thou seest how that by one false
posicion or coniecture wyth the helpe
of the rule of thzee, thys question is
soone Dissolued.

¶ An other question.

Finde a number in the which 5 is $\frac{2}{3}$
that is to say, two third partes of him.
Answer. Imagine any number ye lyst,
that hath thirde in it, as be it 6, then
looke what is the third part of 6, that
is 2, then twoo of this third parte of 6
maketh 4, wherefore this posicion is
false, yet by this false posicion with the
helpe of the rule of thzee, thou shalt
finde

Certayne rules.

fynde out the truth, after this maner
If 4 be the $\frac{2}{3}$ partes of 6, to whō is $5\frac{2}{3}$
partes, serach by the rule of thzee, and
thou shalt finde it $7\frac{1}{3}$

¶ An other question.

What number is that in the whiche
after that the thirde, the fourth and the
fift parte be Deducted out of it, there
shall yet remayne 24? Answer. Ima-
gin anye number that hath a thyrde, a
fourth, & a fift in him. As for example
say it is 60, then subtragh oute of him
his thirde, his fourth, and his fift part,
and thou shalt fynde remayne but 13.
Lo how much thou hast mysted, thou
shouldest haue founde suche a number
in the which after the fore saide partes
were subtrahed, should remayne 24, &
here remaineth but 13, yet proue by the
rule of thze, & thou shalt finde the true
number. If 13 remayne after the sub-
traction of the foresayde partes in 60,
what

Certayne rules.

What number is that out of the which
after lyke subtraction of hys thyrde,
fourth, and fift part shall remayne 24,
proue by the rule & thou shalt finde it

$110 \frac{10}{13}$ whose third part is $36 \frac{12}{13}$ & fourth

27 is $\frac{9}{13}$ the fift $22 \frac{2}{3}$ whych all added
together make $86 \frac{10}{13}$ the which reduces

ted out of $110 \frac{10}{13}$ shall remain 24. These
and diuers other questions befoze re-
hearsed by the same craft one false po-
sicion may soone be assoiled. Now wil
I shew you how to dissolue all maner
of questions, how difficult so ever they
be by two false posicions: For by one
false posicion ye shal not answer to all
maner of questions, but two false po-
sicions, what soeuer question it be, it
may soone haue solucion.

How to answer by two false posicions.

I A numerable questios do chaunce
in numbers, the which though they
can

Certayne rules.

can not be Dissolued by one posicion or coniecture, yet shall it not mysse but be assoiled by two posicions: in the which maner ye must Diligentl̃e note howe farre aboue the truth or vnder both posicions do fall. For by the obseruacion of two coniectures how neare they be to the truthe, and the Difference of the errours which ensue of the posicions, the veritye comineth to lyght, whiche may be Done 2 wayes: one way by the rule of both moze or both lesse. Another waye by the rule of the one moze and the other lesse.

When both posicions be moze then the verity or both lesse, then subducke the lesse error out of the moze error, and that that remaineth shalbe the Deuisor, then multiply the first error by the second posicion and the latter error by the first posicion, and thẽ these two numbers beyng multiplied, Deduck the lesse out of the moze, and that that cemaýneth Deuide it by the foze-
sayde

Certayne rules.

sayd diuisor, & the quocient shal shewe
the verity. Example.

Thzee marchauntes deuided a 109
croones moze then the fyrste, and the
thirde 4 mo the second: I Demaund
now how many croones eche of them
receaued: Answer. Fyrste make saynte
Androwes crosse, as ye see hereafter,
then coniecture what ye lyst, as for ex-
ample: Say the fyrst had 33, and then
muste the second haue 36, and the thirde
marchaunt 60, which sume gathered
toggyther maketh 100, but ye had but
100 to dvyde, wherfore ye haue mis-
sed, and your posycion redoweth to
moze then the very sume by 9, whiche
cam of your fyrste posycion 33 wherfore
set the fyrst poscion 33 at the vpper
ende of the crosse on the lefte syde of y
crosse, and the errour which hath en-
sued of that at the foote of the crosse
on the same syde, as ye see in the exam-
ple. And for bycause that thys coniec-
ture, came to moze then the truth, ther

W.i.

foze

Certayne rules.

foze set this letter **M**. in the space betwene the vpper ende of the crosse and the nether. And foze as much as in this this fyrst coniectur ye haue erred thus much, coniecte agayne & suppose that the fyrste marchaunt had 31 then must the second haue 34, the thyrde 38, all these collecte make 103, so that nowe ye haue erred agayne, your posicion beyng to much, so that your errour is 3, and foze because that this second posicion is moze then the verytie as the first was: set the posicion 31 at the vpper ende of the crosse on the right side, & the errour 5 the fote of the crosse on the same side, & put this letter **M**. between the space to sygnyfy moze. Both these posicions then be moze then the verity wherfoze according to the rule first subduce the lesse errour 3 at the foote of the ryght syde of the crosse from the greater errour at the foote of the left syde of the same crosse, remaineth 6 to be set in the space betwene both the fete as ye se
which

Certayne rules.

which shalbe the dyuisor. Then accord
 dyng to 1st rule, multiply the fyrst po-
 sicion which is 33 by the errour of the
 seconde posicion which is 3, and ther-
 of cometh 99, then the second posicion
 31 by the errour 9 of the fyrst posycyon,
 and thereof cometh 279, then deduct
 the lesse sum 99 out of this more sum
 279, remaineth 180, Dyuide thys sum
 by the dyfference of the errours which
 is the trewe posycyon. For the fyrste
 man hauing 50, the second must hane
 33, and thyr^d 37, which all set together
 make iust 100. Thus wonderfull craf-
 tly by these. ii. false posicions the trewe
 and iust posycion is brought to lyght.

¶ The example.

99	180	279
33		31
36	M	M 34
40		38
9	6	3
	D.ii.	

¶ An

An example whē both posycyons come to lesse then the verity.

When both posycyons come to lesse thē the verity: the which is all one matter with the other, as ye shall perceave by the same example agayne. As suppose ye had coniected that the fyrste had receaved 27, then must the second receave 30, & the third 14, which added togyther make 91 which is lesse by 9 then the sum 100, which shoulde be deuided among them. Set then thys fyrst false posycion 27 at the vpper ende of the crosse on the left syde, and the errour ensuing of that, at the fote of the same crosse on the same side. And for bycause that this posyciō came to lesse then the verite therfore sette this letter L. for lesse, in the space betwene the posicion and the errour, as ye se in the example folowynge. Then coniect agayne and suppose that the fyrst marchaunt had receaved 27 then by that rekenyng the
second

Certayne rules.

second should receaue 52 the thyr^d 30,
which al set together make 97, so that
yet this posycion commeth not to the
verity 100, but lacketh 3 of it, wherfore
set this posycion 29 at the vpper ende
of the crosse at the right syde: and this
error 3 at the foote of the crosse, and
in the space betwene the posycion and
the error set thys letter A. for lesse.
Nowe for so much as both these posy-
cions be lesse then the veryte, worke
as ye dyd before, according to the rule,
subduce the lesse error 3 out of the
greater error 9, remayneth 6 for the
diuisor to be set in the space betwene
the two errors. Then multiplie the
fyrst posycion 27 by the second error
3 commeth 81, then the second coniec-
ture 29 by the fyrst error 9 commeth
261 then deducte 81 out of 261 remay-
neth 180 whych diuyled by 6 the diuis-
or afore sayd, the quocient shall bee 30,
which is the iust and very coniecture,
the whych ye shoulde haue coniected.
Thus

Certayne rules.

Thus ye haue had sufficient example of thys fyrste rule of bothe more, and both lesse.

Here after foloweth the example of both lesse.

81	180	261
<hr style="width: 50px; border: 0.5px solid black;"/>		<hr style="width: 50px; border: 0.5px solid black;"/>
27		29
30	L	L 32
34		36
6	6	3

Here foloweth the rule of one more, and the lesse.

When the one position amounteth to more then the veretye, and the other lesse then the verity, then adde the errours together & that added number shall be the diuisor. Then multiply the fyrst posycyon by the second errour, and the second posycyon by the first errour, & that that cometh of both these multiplicatours ad them together also, then deuide thys addyd number by the addyd errours the diuisor

Certayne rules.

uisor afore said, and the quocient sheweth the true posicion.

The example.

We wyl take the fyrst case agayne, and suppose that the fyrste marchaunt haue receaued 33 crownes, then must the second receaue 35, and the thyrde 39, wherfore that posycion is false and to much by 6, set the posicion 32 at the vpper ende of the crosse, and the errour 6 at the neather end of the crosse: in the space betwen, ye shall set this letter M for more. And for bycause that this posicion hath exceded the verytpe, coniect agayne lesse, and suppose that the fyrst haue receaued 20. then must the second receaue 22, the thyrde 39 al addyd together maketh 97, which is lesse then the verytpe by 3, wherfore set this false posycion 29 at the vpper ende of the right syde of the crosse, and the errour 3 at the nether fote of the crosse: in the space betwene set thys letter L. for lesse. Of these two false posiciōs y one is more then

Certayne rules.

Then the truth, the other is lesse, wher-
foze accordyng to the rule ad both the
errours 6 and 3 together, that maketh
9 for the diuysor: the multiply the first
posicio 32 by the second' errour 3 which
maketh 96. and the second posicio 29
by the first error 6, which maketh 174
& that that ensueth of both these mul-
tiplicaciōs ad it together, & it maketh
270 diuysde this addyd number by the
addid erours, which was 9, & the quo-
tient shalbe 30 whych is the true posi-
cion as ye may proue.

The example.

69	270	174
<u>32</u>	30	<u>29</u>
35	M	32
36	L	36
6	6	3

Thus maye ye dissolue al other ma-
ner of questiōs, which haue ben set be-
foze in this booke, without great paine
or studye.

C F I N I S.

Introduction